RESOURCE ALLOCATION AND PERFORMANCE OF HIGH SCHOOL STUDENTS IN
UNIT SCHOOL DISTRICTS IN THE STATE OF ILLINOIS

BY

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DISSERTATION

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Abstract

Illinois has distinguished itself as one of the most inequitable states in the nation when it comes to state PK-12 education funding. With the advent of the No Child Left Behind Act, and more recently, the Every Student Succeeds Act, student achievement data has been thrust in front of the public, and conversations regarding equity, quality, accountability, and efficiency have dominated much of the dialogue regarding public education. This ex post facto quantitative study examined the relationship between instructional expenditures and the achievement of 11th grade students in public PK-12 (unit) school districts in the State of Illinois on the composite portion of the ACT. Data used for this study involved the 2012-2013 school year administration of the ACT exam and financial data reported for 375 Illinois unit school districts to the Illinois State Board of Education (ISBE) from that year. The analysis involved instructional expenditures and the performance of 11th grade students on the composite score of the ACT examination. The study also analyzed relationships between instructional spending and student performance while accommodating for poverty level as measured by student participation in the National School Lunch Program (NSLP) through free or reduced-priced lunch. The study then analyzed the relationship between instructional spending and the performance of Black, Hispanic, and Native American student subgroups. Finally, the relationship between instructional spending and the performance of Black, Hispanic, and Native American students was analyzed after accommodating for poverty level as measured by participation in NSLP.

There was no statistically significant relationship between instructional spending and the overall performance of 11th grade students in Illinois unit school districts in the 2012-2013 school year. No statistically significant relationship was found after accommodating for poverty. However, findings did show a significant relationship between instructional spending and the

performance of Black, Hispanic, and Native American students where these student subgroups comprised 10-20% of the district enrollments. This finding was consistent regardless of whether the analysis accommodated for poverty level. However, no statistically significant relationships were found in districts where less than 10% or over 20% of the overall student enrollment was comprised of Black, Hispanic, and Native American students. The conclusion is that district spending on instruction does have a relationship to 11th grade student achievement in unit school districts for specific, targeted student populations.

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Chapter One

Introduction

Despite being a worldwide leader in trade, technology innovation, and per capita Gross Domestic Product (GDP), the United States continues to struggle with tremendous disparities in income and wealth among portions of its population (McKown, 2013). Connected to these inequalities and imbalances in wealth is an equally serious inequity in literacy and numeracy skills among all U.S. inhabitants (Kirsch, Braun, Yamamoto, & Sum, 2007). Many disparities that exist within the PK-12 education system have been laid bare before the U.S. citizenry as a result of mandatory reporting requirements included in the No Child Left Behind Act (NCLB) and its recent reauthorization, the Every Student Succeeds Act (ESSA). Student performance data, including an analysis of achievement gaps, show that the PK-12 system as a whole is particularly inefficient and denies opportunities to many of the members of the public that it claims to serve (Beck & Shoffstall, 2005). For example, data from the Illinois State Board of Education (ISBE) 2018 Annual Report shows substantial achievement gaps on the NAEP exam between the general population and African American, Hispanic, English Language Learners, and Economically Disadvantaged student sub-populations (ISBE, 2018a).

According to the most recent National Curriculum Survey on the Condition of College and Career Readiness, high school graduates achieving below college and career ready benchmarks are not fully prepared for postsecondary opportunities, and thus, are likely to struggle in college-level classes (ACT, 2016a). Students who do not have adequate literacy and numeracy skills may not graduate from high school or—if they do graduate—may be required to enroll in developmental programs before they are permitted access to credit-bearing college coursework (Kirsch et al., 2007). Thus, they are at risk of failing to maximize their lifetime

earnings potential and likely will have a lower quality of life as adults. The 2012 Program for the International Assessment of Adult Competencies (PIAAC) survey focused on cognitive and workplace skills needed for successful participation in 21st-century society and the global economy; according to this study, 65% of the unemployed U.S. labor force scored at level 2 (out of 4) or below on the literacy scale, and 77% scored at level 2 or below in numeracy (Rampey et al., 2016). In addition, 83% of adults who fail to achieve a high school credential are at level 2 or below on the literacy scale, and 91% are at level 2 or below on the numeracy scale. These achievement gaps in literacy and language must be substantially reduced in order to give all students optimal opportunities for college and career success after high school.

Under the Reserve Clause of the U.S. Constitution, the U.S. public education system is a responsibility of each individual state and, over time, each state has created its own method of maintenance and funding that serves the particular needs of its constituents. This structure has given rise to as many different PK-12 funding systems as there are states and territories in the U.S. However, in comparison to the rest of the nation, Illinois is particularly inefficient in its education funding and denies equitable opportunities to many students that it claims to serve. Illinois has received a D grade with regard to state funding distribution in 2012 and an F grade in every other year from 2007-08 through 2014-2015, according to an annual report on state education funding produced by Baker, Sciarra, and Farrie (2018).

Starting with the National Commission on Excellence in Education's 1983 *A Nation at Risk* report (NCEE, 1983), the national conversation regarding accountability and efficiency in public education has increased in visibility and intensity throughout the past three decades. Reflecting on the achievement gaps that were thrust in front of the public with the advent of NCLB, conversations regarding quality, accountability, and efficiency have dominated much of

the dialogue regarding public education. Topics such as student achievement, teacher effectiveness, and funding efficiency make headlines in the newspapers, on television, and across the internet. In Illinois, the performance of economically disadvantaged students is lower than that of their economically advantaged peers, regardless of race (ISBE, 2018e). In addition, Darling-Hammond (2007) asserted, "our society not only constructs substantial income inequality with fewer social supports for poor children, but it also funds the schools these children attend much more inadequately" (p. 22). Kozol (1991) demonstrated over 25 years ago that these economic discrepancies existed specifically in the state of Illinois as he articulated the effects of economic inequalities. Data from the 2018 ISBE Annual Report shows that the discrepancies in achievement continue today (ISBE, 2018a). This reality of ongoing achievement gaps along with existing funding gaps has increased conversation about improving the educational environment and achievement of underserved students.

In a long-awaited response to outcries over funding disparities across Illinois' public-school districts, the Illinois General Assembly enacted legislation in 2017 reallocating state-provided funds. The change to the state funding system provided additional funds to all school districts, with property-rich districts receiving smaller increases and the property-poor districts receiving the largest increase in dollars with the goal of providing improved education for the state's neediest students (ISBE, 2017b). Details on the administration of the new funding formula are not yet clear; however, this legislation combines all previous state grant programs into a single grant program. In addition, the promise of additional funds for education is included. It is imperative that the relationship between school expenditures and student achievement be understood, as these expenditures are redistributed and utilized by school districts throughout the state.

Statement of the Problem

The existence of a link between funding and student achievement has been a sustained and hotly debated topic in education research, and researchers have garnered significant attention as they articulated the significant differences in educational funding in the state of Illinois. A major impetus of this debate originated in 1966 with the Coleman Report, which held that family background, not funding, was the major contributor to academic achievement (Coleman et al., 1966). In the decades between Coleman's work and the mid-1990s, more than 377 research studies attempted to discover the effects of financial resources on student achievement (Hanushek & Rivkin, 1996). In 1983, *A Nation at Risk* reinforced the opinions of those who felt there was something wrong with the U.S. education system (NCEE, 1983).

With the reauthorization of the Elementary and Secondary Education Act (ESEA) in 2001, more commonly known as NCLB, the federal government began to play a more influential role in school funding by directly linking funds to student achievement. NCLB included mandatory reporting of subgroup performance on statewide assessments, and with this required subgroup accountability, many of the inequalities and inequities that exist within the U.S. education system were laid bare before the American public.

Since that advent of NCLB, the conversation regarding accountability and efficiency in public education has only increased in visibility and intensity. The obligation for states to report achievement data by student subgroups continues with the reauthorization of ESSA in 2015 as the Every Student Succeeds Act (ESSA). Reflecting on the achievement gaps that have been thrust in front of the public with NCLB and ESSA, conversations regarding accountability, equity, and efficiency have dominated much of the national conversation regarding public education. Topics such as student achievement, teacher effectiveness, and funding efficiency

make headlines in the newspapers, on television, and across the internet. Researchers have added

to the debate, reporting that spending hikes in education have academically benefitted poorer

students across the country (Jackson, Johnson, & Persico, 2014). Although the general public

historically has accepted educational inequalities and inequities as inevitable (Kozol, 1991), the

increased dialogue regarding these deficiencies shows some promise for future changes that may

improve the lot of underserved students.

The relationship between school funding and student performance has been a question

that has been researched across the United States over the past 50 years and that has been

examined with multiple research approaches. Early research was subject to available data such as

graduation rates, teacher/pupil ratios, and teacher experience levels (Coleman, 1966). As states

moved into universal standardized testing in the 1980s and 1990s, the available data became

more robust as well as more accessible to researchers, allowing for meta-analyses by researchers

such as Hanushek (1986), as well as analysis of larger data sets by other researchers (see Baker,

1991; Verstegen & King, 1998; Wenglinsky, 1997).

Unfortunately, researchers have been granted limited access to data, so many studies

were limited in their scope. According to Stegmaier-Nappi (1997), "the problems include limited

data and outputs that are often too complex to measure" (p. 61). After NCLB enactment in 2001,

federal requirements for data collection provided for more expansive and robust student

achievement data. These datasets afforded comprehensive information ranging from overall state

achievement to the achievement of subgroups of students within districts and even individual

schools. These advancements in data collection and data sharing have provided opportunities to

overcome many of research issues identified by Stegmaier-Nappi.

There exists a persistently stubborn reality in the United States—and particularly in the state of Illinois—in which students residing in economically disadvantaged communities are performing at lower academic levels than their peers in more affluent communities. Due to the inability to generate sufficient revenue in property-poor communities, the schools and districts that these students attend continue to be funded at lower levels than the schools and districts of their economically advantaged peers. Until recently, there is little recent research in this area specific to Illinois public school districts, and the research that had existed relied on limited data sets from assessments designed before the development of the 1997 Illinois Learning Standards (Grace, 2002; Sharp, 1993), as well as NCLB, or is based on self-selecting student populations (Rich, 1999).

Recent research has examined the effects of funding in Illinois elementary districts containing grades PK-8 (DiGangi, 2017) and high school districts containing grades 9-12 (Krause, 2017); however, a problem exists, in that similar research has not been conducted in Illinois unit districts containing grades PK-12 (termed "unit" districts in Illinois). There were 373 elementary districts included in DiGangi's study and 100 high school districts included in Krause's research from the 2013-2014 school year, including a combined average daily attendance of 713,718 students (ISBE, 2016d). During the 2012-2013 school year there were 387 unit school districts in the State of Illinois with an average daily attendance of 526,982 students (ISBE, 2016c). Despite the studies conducted by DiGangi and Krause, the adequacy of funding these 387 districts, enrolling over 62% of Illinois public school high school students, remains unexplored.

Krause (2017) examined if a relationship existed between specific school budget categories related to per-pupil expenditures and achievement for all Illinois high school districts

as indicated by average ACT composite scores. Krause used financial data from the ISBE and the ACT portion of the Prairie State Achievement Examination (PSAE) that was administered to 11th grade students attending public high schools. A significant relationship between student achievement and educational resources was identified, with positive correlations existing between Student Support Expenditures and Instructional Expenditures per-pupil and the composite ACT scores for the 2002-2003 and 2013-2014 school years. DiGangi (2017) conducted a quantitative study analyzing per-pupil expenditures in Illinois public elementary school districts and the achievement data of low-income students on the Reading and Math portions of the Illinois Standard Achievement Test (ISAT) for the 2013-2014 school year. She identified a significant negative relationship between both low-income district percentage and individual low-income percentage and student achievement on both the reading and math portions of the ISAT. In addition, DiGangi found increases in per-pupil expenditures do correlate to increases in student achievement, signifying that "even modest expenditures in IEPP can make differences in achievement" (p. 102) for students in the lowest spending quartile of school districts. This study explored the remaining set of Illinois public school districts: unit districts that enroll students in grades PK-12.

The Purpose of the Study

The purpose of this quantitative study was to determine whether there is a relationship between school district funding and the performance of 11th grade students on the ACT who are attending unit districts in the state of Illinois. The ACT portion of the Prairie State Achievement Examination (PSAE) was administered annually, from the 2000-2001 school year to the 2013-2014 school year, to all 11th grades students attending Illinois public high schools. The PSAE was replaced in the 2014-2015 and 2015-2016 school years with the Partnership for Assessment

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of Readiness for College and Careers (PARCC) examination, a new assessment created by the PARCC consortium. In the 2016-2017 school year, ISBE replaced the ACT exam with the SAT, requiring its annual administration to all juniors attending Illinois public schools. The ACT has proven to be a data-reinforced measure of student college and career readiness (ACT, 2013), and it is the most reliable set of data that exists for high school student achievement in the State of Illinois between the 2000-2001 and 2013-2014 school years. As a result, there existed a final opportunity to use the ACT data to examine correlations between funding of Illinois unit districts and their ACT composite score date for the 2013-14 school year.

Rationale

Scholars have reviewed and proposed the alignment of state accountability policies with state finance formulas (Adams, 2008; Superfine, 2009; Verstegen, 2002). With the increased focus on improving student academic achievement that began with NCLB in 2001, it is becoming increasingly important that resources be targeted in the most efficient and effective manner possible. The allocation of financial resources based upon research-based practices that demonstrate improvements in student achievement may result in improved student learning (Governor's Education Symposium, 2011).

Under NCLB and ESSA mandates, schools and districts are required to report standardized testing data, disaggregated by student gender, race/ethnicity, English Language Learner classification, and socio-economic status. Thus, it is possible to not only investigate a relationship between funding and overall student performance but also to evaluate whether there is a relationship between school funding and the performance of federally designated subgroups. This proposed study seeks to answer these questions with regard to the funding of Illinois unit school districts and the performance of students as measured by the ACT composite scores.

This study adds to the existing body of research by addressing a gap that seeks to tie school funding to student academic achievement in Illinois unit districts. In addition, given the focus on improving student achievement and the advent of a new funding formula in the State of Illinois, it is vital that educational leaders understand the relationship between educational expenditures and student achievement so that resources can be allocated to areas that are most effective in promoting student learning gains.

Conceptual Framework

Education Production Function Analysis was the conceptual framework applied in this study to describe the output of student achievement based on the input of financial resources. A product function is an economic concept that is used to "describe the maximum level of outcome possible from alternative combinations of inputs" (Monk, 1989, p. 31). Education Production Function Analysis is a model that considers inputs that are added to schools, and in turn attempts to measure outputs as measures of student achievement.

In 1878, the measurement of business efficiency based on inputs and outputs was introduced (Perkins, 1992). That mathematical measurement of business efficiency was adapted in a manner that allowed mathematical functions to be used to evaluate efficiency of educational institutions. Production function analysis as an evaluation tool for education system performance came into large-scale use in 1966 with the publication of the Coleman Report (Coleman et al., 1966); this report marked the first large-scale study that evaluated outputs of an educational system as a function of various inputs. A wide variety of input variables were included in the Coleman study, including school facilities, characteristics of staff, types of curriculum offered, and socioeconomic background of the student population. Since that report, numerous

researchers have sought to measure relationships between numerous input variables and student performance or achievement.

Public interest in the evaluation of school efficiency and effectiveness increased at the turn of the 21st century. King, Swanson, and Sweetland (2003) stated the focus of educational efficiency should be on increasing desired outputs such as graduation rates and student college and career readiness from existing available resources. This philosophy was clearly evident in the NCLB Act of 2001, where provisions were made linking school efficiency to student performance outcomes. These student performance outcomes often manifested themselves as scores on standardized tests. Provisions were made through NCLB that linked student performance outcomes to financial consequences, such as the mandatory implementation of free academic interventions to implement student learning, introduction of new curriculum, wholesale replacement of staff, and possible closing of the school. As a result of these possible consequences, an increased focus has been placed on the outputs of the public education system—specifically, student performance and achievement. Continuing with ESSA in 2015, student achievement outcomes are a necessary part of the decision whether states, districts, and even individual schools should continue with current policies and practices or to diverge from past practice to improve student achievement. In this study, the Education Production lens is used to assess Illinois student performance on the ACT as an output, while using per-pupil spending as an input into the system.

This study investigated the relationship between expenditures for the 2012-2013 school year and the performance of students as measured by the ACT composite score during the final State of Illinois administration of the PSAE for the graduating class of 2014. This study applied a measure of adequacy in achievement and readiness for postsecondary education derived and used

by ACT. Adequate achievement is based on a student meeting the ACT benchmark scores of 22

in the mathematics and 18 in the English sub-tests of the ACT. A benchmark score is the

minimum score needed on an ACT subject-area test to indicate a "50 percent chance of obtaining

a B or higher or a 75 percent chance of obtaining a C or higher in the corresponding credit-

bearing college courses, which includes algebra" (Clough & Montgomery, 2015, p. 4). The ACT

benchmark scores in English, Reading, Math, and Science are empirically derived based on the

actual performance of students in college, and undergo periodic reassessment and reevaluation as

demonstrated by the changes made as a result of the 2016 Curriculum Survey (ACT, 2016a).

Research Questions

This study addressed the following research questions:

1. What is the relationship between district spending per-pupil for the 2012-2013 school year and student achievement on Composite portion of the ACT administered during the 11th grade PSAE administration?

2. What is the relationship between district spending per-pupil for the 2012-2013 school year and student achievement on Composite portion of the ACT administered during the 11th grade PSAE administration after adjusting for poverty level?

3. For each tercile as determined by total percentage of selected subgroups (including Black, Hispanic, and Native American), what is the relationship between district spending per-pupil for the 2012-2013 school year and student achievement on composite portion of the ACT administered during the 11th grade PSAE administration?

4. For each tercile as determined by total percentage of selected student subgroups (Black, Hispanic, and Native American), what is the relationship between district per-pupil spending for the 2012-2013 school year and student achievement on the composite portion of the ACT administered during the 11th grade PSAE administration, after adjusting for poverty level?

Significance of the Study

There is limited research with regard to the relationship of spending and achievement of

Illinois high school students. Frank (1990) and Grace (2002) conducted studies using self-

selecting populations, and Krause (2017) researched the relationship between financial inputs

and student achievement in high school districts. Sharp (1993) conducted perhaps the most extensive and inclusive study, analyzing spending levels and standardized state assessment data from the Illinois Goals Assessment Program (IGAP) exam; however, this study has not been replicated. Rebell (2007) stated:

In the end, all of the elaborate economic production analyses and discussions in the academic literature and in the legal decisions about whether money matters really come down to a basic consensus that, of course, money matters—if it is spent well (p. 1487).

By examining the relationship between education funding and student achievement in the state of Illinois, state legislators and policymakers, local school board members, and local education leaders can better understand the factors that impact student achievement and allocate resources in the most effective manner possible. In addition, the practice of evaluating the productivity of schools and districts can provide future leaders and researchers with additional insight and information to improve school funding and resource allocation.

Assumptions

The following assumptions were central to the design and execution of this study:

1. The ACT is a valid measure of student achievement, and the data provided by ACT and ISBE were accurate for the 2014 school year.

2. The accounting practices defined by the State of Illinois have been properly executed by all Illinois school districts as they pertain to educational expenditures.

3. The student enrollment numbers reported to the ISBE by local school districts were accurate for the 2012-2013 school year.

Overview of Methodology

This study was a quantitative, ex post facto study using a nonexperimental design. Creswell (2009) defined a quantitative study as a type of research in which the researcher uses narrowly focused questions to allow for the collection of quantifiable data. The data are then

analyzed in an unbiased and objective manner. An ex post facto study involves a process of going backward in time to identify corollary factors (Leedy & Ormrod, 2001). This study was nonexperimental in nature.

This study drew from primary source data existing as part of publicly accessible data archives within the state of Illinois. The source of this information was the Illinois State Report Card Data, published annually by ISBE online. The financial data set from the 2012-2013 school year and the final Composite scores from the graduating class of 2014 were used, because the graduating class of 2014 was the final class completing all 4 years of their high school program without a change to the PSAE assessment system, and the 2012-2013 financial data matched the year that the graduating class of 2014 completed the ACT as a portion of their 11th grade assessment. The ACT portion of the PSAE exam has exhibited historical stability and has proven to be a data reinforced measure of student college readiness. At the high school level, it is the most reliable set of statewide student achievement data in existence for high school juniors in the State of Illinois.

A set of regression analyses were conducted in order to evaluate correlations between school funding and student performance on the ACT, specifically analyzing relationships for all students as well as for Black, Hispanic, and Native American subgroups. Statistical significance was measured through the use of Pearson's r coefficient. A linear regression analysis was performed on each independent variable in relation to the dependent variable to determine if a correlation existed. Pearson coefficients were then squared to identify the amount of variance explained within the model.

Limitations

Limitations are the restrictions created by the researcher's choice of methodology. This study had several limitations.

First, this study was limited to 385 unit school districts in the state of Illinois, with the exclusion of Chicago Public Schools due to its size and unique status as the third largest school district in the United States. Illinois also contains 100 high school districts (grades 9-12) and 373 elementary school districts (grades PK-8); the study is limited in that it does not include test data from students enrolled in these high school districts in the analysis. Also, the study does not include private and parochial institutions, as they were not mandated to participate in the ACT and thus, would not be included in the ISBE data.

Secondly, expenditure per-pupil for high school districts is skewed in that it includes the operational costs to provide educational services only for grades 9-12; similarly, expenditure per-pupil for elementary school districts only includes operational costs for grades PK-8. Data analysis on educational expenditures indicates that educational spending for both instruction and operations at the high school level are greater than the spending at the lower grade levels and, thus, the dollar amount spent at the high school level is not necessarily representative of the dollar amount spent per pupil for their entire educational careers. By focusing the study on unit districts, the amount of money spent per pupil within each school district is maintained at a more consistent level than it would be for a student moving from an elementary/middle school district to a high school district.

A third limitation is that this study does not include other factors that potentially could affect student performance. Understanding that the socioeconomic level of a community has a direct effect on the educational expenditures of that community, data will be evaluated before

and after adjusting for community poverty levels. However, factors such as percent of adults with bachelor's degrees or higher in the community, parental involvement in the schools, attendance rates, class size, years of teaching experience, teacher certification levels, and level of education of teachers are not addressed in this study.

Fourth, this study uses only a single year of data from the spring 2013 administration of the ACT. No attempt is made to investigate possible changes or fluctuations to the ACT or to district data over time.

Fifth, this study focused on Black, Hispanic, and Native American subgroups designated by the State of Illinois as a result of the reauthorization of NCLB. The study thus does not examine other subgroups beyond these federally designated subgroups. Black, Hispanic, and Native American subgroups have demonstrated a persistent achievement gap between those subgroups and the general student population in Illinois and across the United States, and therefore warrant additional research. Asian and Native Hawaiian/Pacific Islander, subgroups were excluded from the data due to either their lack of a persistent achievement gap or due to their exceptionally small sample size across the state. The Multi-Racial/Two or More Races subgroup was excluded due to the inability to identify whether the students were part of the subgroups with persistent achievement gaps or not.

Sixth, the use of free and reduced-price lunch data as an indicator of low income can underrepresent the number of students in poverty, particularly at the high school level. Students classified as receiving free and reduced-price lunch are often underrepresented due to the availability of other lunch options, social stigma of participating in the program, and/or fear of repercussions for enrolling in the program. These factors could lead to the number of students in poverty being underrepresented in the data.

Seventh, more affluent families or wealthy school districts often have financial means that less privileged families do not possess to access learning supports in preparation for college admissions. This can be true for students and families who wish to access test prep materials, classes, or tutoring for college entrance examinations. Students who attend schools that offer test prep programs or who come from affluent families may reap the benefits from additional instruction, through higher scores on the ACT exam. The ability to access test prep resources may lead to students from higher-income families or wealthier districts gaining an advantage in taking the ACT exam.

Finally, the use of the ACT as a statewide testing tool as well as the funding structure is directly related to Illinois policy and practice. Statewide administration of the ACT for public high school juniors is currently required in 15 states across the United States (ACT, 2016c). The results of this study are not generalizable to states that do not use the ACT for statewide assessment. In addition, funding structures for public education differ from state to state, and the results of this study may not be applicable for states with dramatically different PK-12 funding systems.

Delimitations

Delimitations are the factors that prevent a researcher from claiming that findings are true for all people in all times and places. This study was delimited in several ways.

First, this study focused on ACT composite score from the Spring 2013 statewide administration in Illinois public high schools. The ACT is a nationally normed exam that was used by ISBE to annually assess 11th grades students as part of their annual state testing until the Spring 2013, when the practice was discontinued. Schools and districts were required to assess over 95% of their 11th grade cohort each year on the PSAE, ensuring a representative database of

Illinois public school students statewide but also for each district and public high school within the state.

Second, this study focused on Black, Hispanic, and Native American student subgroups designated by the State of Illinois as a result of the enactment of NCLB. This decision provided a clear designation of uniform data that schools and districts were required to report to ISBE, ensuring complete data from all schools and districts within Illinois. Other subgroups, including Second Language Learners, Asian, and students with IEPs were not included in this study.

Third, this study delimited financial input to per-pupil instructional spending. Some studies have investigated other inputs, such as operational or overall spending. However, operational spending can vary widely from year to year depending on capital improvement projects within schools or districts, and these types of variations can cause districts' operational and overall budgets to vary widely on an annual basis. This study used data that encompassed the total instructional spending per student; it is reported annually to ISBE by all Illinois public school districts, and the reports follow specific guidelines.

Definition of Terms

ACT. ACT is a private, non-for-profit organization that provides assessment, research, information, and other services in the broad areas of education and workforce development (ACT, 2018).

ACT College Readiness Benchmark. The ACT program developed benchmarks to establish what is required for student success in standard first year college courses in the areas of English, math, reading and science. This benchmark score is the minimum score needed on the ACT subject area test to indicate a 50% chance of obtaining a B or higher or a 75% chance of obtaining a C or higher in the corresponding college credit-bearing course. These courses include

English Composition for English, College Algebra for math, Social Science for reading, and Biology for science. To meet these benchmarks, students must score an 18 on the English portion of the ACT, a 22 or better on the math portion, a 22 or better on the reading portion, and a 23 or better on the Science Reasoning portion of the ACT (ACT, 2013).

ACT composite score. The ACT composite score is a scaled score from 1 to 36, with 36 being the highest. The English, mathematics, reading, and science reasoning scaled scores are averaged and the total is rounded to the nearest whole number to provide the ACT composite score (ACT, 2016b).

ACT subject area subscore. The raw score on the English, mathematics, reading, and science reasoning tests is converted to a scaled score from 1 to 36 using an ACT-generated conversation chart. This scaled score is the ACT subject area subscore (Noble & Camara, 2003).

Elementary district. A public school district in the State of Illinois containing grades prekindergarten through eight. There were 373 elementary school districts in the State of Illinois during the 2012-2013 school year, with an average daily attendance of 489,785 students (ISBE, 2016c).

Education Production Function. The relationship between the inputs used in production and the level of output (Stiglitz & Walsh, 2007). This relationship is often used to "make accurate assessments of efficiency, and have the requisite knowledge to effect improvement" (Monk, 1989, p. 32).

Equity. The fair distribution of costs and/or resources (Berne & Stiefel, 1984). Equity and equitable funding is based on the belief the higher the percentage of low-income or otherwise disadvantaged students in a school district, the greater the disparity in achievement and the greater the cost to equalize for each student's status (DiGangi, 2017).

Funding adequacy. The minimum level of funding by schools to educate its students to desired results (Malin, 2015).

High school district. A public school district in the State of Illinois that contains grades 9 through 12. There were 100 high school districts in the State of Illinois in the 2012-2013 school year with an average daily attendance of 226,526 students (ISBE, 2016c).

Illinois designated subgroup. This classification includes all groups for which annual assessment data must be disaggregated for state and federal accountability purposes. Designations include American Indian, Asian/Pacific Islander, Black, Hispanic, White, Limited English Proficiency, Economically Disadvantaged, and Students with Disabilities.

Instructional expenditure per pupil. Instructional expenditure per pupil (IEPP) "includes activities dealing with the teaching of pupils or the interaction between teachers and pupils" (ISBE, 2018b, p. 5).

Low-income. Defined by the state of Illinois as students who reside in a household that received public aid through Supplemental Nutrition Assistance Program (SNAP) or Targeted Assistance for Needy Families, or their household income meets United States Department of Agriculture guidelines to receive free or reduced-priced lunch (FRL). Families earning from below the poverty line to 185% of that threshold are included.

Partnership for Assessment of Readiness for College and Careers (PARCC). The Partnership for Assessment of Readiness for College and Careers was created by a group of 24 states "to develop a modern assessment that replaces previous state standardized tests" (PARCC, 2017). The State of Illinois was part of the consortium and administered the PARCC exams at the high school level during the 2014-2015 and 2015-2016 school years.

Prairie State Achievement Examination (PSAE). The PSAE was the Illinois state-mandated assessment program to measure student achievement for junior students enrolled in high schools. This assessment includes the ACT, with its composite and four subtests (English, mathematics, reading, and science) plus a 30-minute writing test, an ISBE science assessment, and two WorkKeys assessments (applied mathematics and reading for information). The assessment was given the final time in Spring 2014.

School district. A regular operating public elementary (grades PK-8), high school (grades 9-12), or unit (grades PK-12) district in the State of Illinois. Excluded are other state-funded education agencies, such as area vocational centers, special education cooperatives, university laboratory schools, the Illinois Math and Science Academy, and education organizations within the Departments of Rehabilitation Services and Corrections (ISBE, 2002).

Unit school district. A public school district in the State of Illinois containing grades prekindergarten through 12. There were 387 unit school district in the State of Illinois in the 2012-2013 school year with an average daily attendance of 1,150,263 students (ISBE, 2016c).

Summary

This chapter provided background for this study, stating the problem, presenting the purpose, and providing a rationale for the proposed study. With the reauthorization of The Elementary and Secondary Education Act in 2001, a new emphasis was placed on student performance and efficiency in public education in the State of Illinois. As a result of the reauthorization, the State of Illinois was required to institute standardized testing across the state for students in multiple grades, culminating with the PSAE in a student's 11th grade year. A portion of that exam included the ACT, and as a result, a robust body of data exists regarding

overall student achievement as well as the performance of subgroup populations on the PSAE and the ACT.

However, the reauthorization of the ESSA and subsequent institution of the PSAE and ACT exam laid bare many of the inequalities that exist in the State of Illinois when it comes to funding and to student achievement. Substantial achievement gaps exist between the general student population and federally designated subgroups (ISBE, 2016b). Illinois consistently has been rated with a failing grade when it comes to funding distribution among school districts. With the 2017 passage of a new education funding formula in the State of Illinois, it is important that additional education funds are invested in areas where they can best benefit student learning and achievement. Finally, a conceptual framework was outlined, and research questions were stated. The significance of the study was presented with assumptions, delimitation, limitations, and definitions of terms.

Chapter Two

Review of Literature

Across the United States, "significant differences are evident regarding both the level and manner in which PK-12 public schools are funded" (Malin, 2015, p. 18). The State of Illinois provides an interesting case, demonstrating public school district funding characteristics similar to those in some states and also features that differ greatly from others. In a 50-state survey of school finance polices conducted by Verstegen (2014), Illinois is among the majority (36 states) that choose to include some method of per-pupil weighting in the state distribution of special education funds. In addition, Illinois is one of 37 states utilizing a funding mechanism for low-income students, 42 states with a funding mechanism for funding English Language Learners, and 28 states with funding for career and technical education. Conversely, Illinois finds itself in the minority, in that it is one of 17 states that do not provide additional funding for gifted and talented programs and 18 states that do not have a special mechanism for funding remote rural and small schools.

The most common education funding system in the nation is the foundation program utilized by 37 states, followed by the district power equalizing (DPE) system utilized by two states, and the flat grant and full state funding formula utilized by one state each (Verstegen, 2014). Illinois was the only state with a three-tiered finance formula program for education funding. The remaining eight states have a combination/tiered funding system as Illinois did, but each of these systems demonstrate some characteristics that make them unique from the other eight.

Illinois applies a three-tiered elementary/secondary education funding formula that combines income from local property taxes with general and categorical aid dollars from the

Illinois General Assembly. This blended system has created a situation in which the funding dollar amount per-pupil varies across the state's 862 public school districts, sometimes by tens of thousands of dollars. ISBE reported that the average operating expense per student in the 2012-2013 school year was $11,128. As examples of expenditures for individual districts, Rondout Elementary School District 72, a school district with a single school and an enrollment of under 150 students, spent $28,497 per student in the 2012-2013 school year, and Ohio Community High School District 505 spent $27,030 per student, the two highest expenditures per pupil in the state. In all, 16 out of 862 school districts spent over $20,000 per student during the 2012-2013 school year. At the other end of the spectrum, Paris-Union School District 95 spent $6,353 per student and Field Community Consolidated School District 3 spent $6,362 per student, the lowest expenditures per pupil in the state (ISBE, 2016c). Overall, 24 school districts spent under $7,500 per student during that school year. These disparities have led to Illinois being labeled one of the most inequitable states in the nation when it comes to state PK-12 education funding (Baker, Sciarra, & Farrie, 2018).

This inequity in funding has created an unfortunate situation of winners and losers among Illinois school districts, and public dissatisfaction with the school district funding approach has manifested itself in different ways over the years. The Illinois education funding system has been challenged in court numerous times, including *Committee for Educational Rights v. Edgar* (1996), *Lewis v. Spagnolo* (1999), and most recently *Chicago Urban League and Quad County Urban League v. State of Illinois and Illinois State Board of Education* (2008). State court justices returned the issue to the Illinois General Assembly on the initial two occasions, leaving it to Illinois legislators to determine what revisions, if any, to make to the educational funding formula. Legislators have failed to take any substantive action. The Chicago Urban League and

Quad County Urban League filed their suit in Cook County Circuit court in 2008, and settled out of court with ISBE in February 2017. Historically, both judicial and legislative challenges to the State of Illinois education funding system have largely met a dead end.

Adding to the conversation is the fact that an additional avenue for evaluating state funding efficiency and effectiveness has become more readily accessible over the past two decades. With the advent of NCLB and the adoption of statewide-standardized testing in the State of Illinois, student achievement data for each school district has become readily available. The Prairie State Achievement Exam (and the ACT as a portion of that exam) has provided a substantial dataset that can complement the school funding information.

All 11th grade students in Illinois public schools participated in the ACT after the adoption of the nationally normed standardized exam, providing an extensive student achievement dataset from across the State of Illinois. This dataset, coupled with increased access to the internet and to school data through the ISBE website, has provide the general public with ready access to information about school district finances and student performance. It permits researchers to access the information. An analysis using school funding as an input to the educational system and student performance and college readiness (as measured by the ACT) as an output of the educational system may provide information on the validity of arguments that call for equal or even equitable school funding.

This literature review identifies varying arguments and perspectives of educational scholars related to PK-12 education funding and student performance from the past 50 years and critiques the validity of these arguments. Attention is paid to trends within the research, methods used, how previous research may be improved as a result of current datasets, and how the analysis of current data may provide guidance for the future. First, I provide a historical

overview of the educational funding structure in the state of Illinois. Next, I provide an overview

of the inequities in Illinois that have resulted from the school funding system, and identify legal

challenges to the funding system over time. I outline budgetary as well as systematic reform

efforts that have taken place in Illinois, and then provide an overview of the Education

Production Function and the manner in which it has been used across the United States to

evaluate factors that influence student achievement.

Education Funding in the State of Illinois

The Tenth Amendment Reserve Clause of the U.S. Constitution expresses that any

"powers not delegated to the United States by the Constitution, nor prohibited by it to the States,

are reserved to the States respectively, or to the people." Public education is one of the powers

relegated to the individual states, and those responsibilities have been borne in differing ways

over the past centuries. States have various funding possibilities and structures for the general

population and ways of dealing with differing wealth capacities of districts (Carey, 2002).

In 1973, the Illinois state legislature created the first new state funding formula since

1927. The new state aid funding formula was intended to avoid future lawsuits, but due to

political pressures, the more progressive funding system was supplanted by a formula that

resembled the previous grant-in-aid formula that had existed in the state (Hickrod, Arnold,

Chaudhari, McNeal, & Pruyne, 1993). In December 1997, the Illinois General Assembly enacted

Public Act 90-548, implementing the new funding system in fiscal year 1999. This funding

system remained in place until a new system was implemented in 2017. The new funding system

utilized local property taxes and the foundation formula as the basis for education funding in the

state.

The most prevalent form of funding in the nation, including Illinois, is the use of the foundation formula (Carey, 2002). The primary intent of states to use a foundation formula is to provide sufficient revenue to local districts so they may ensure at least a minimal (e.g., foundational) level quality of educational programming to their students statewide. The foundation formula produces a fixed per-pupil state allocated dollar amount that is the basis for each school district to provide an education to its students (Odden & Picus, 2004). The foundation level in the State of Illinois for the 2016-2017 school year was $6,119 (Education Funding Advisory Board, 2017).

Under the foundation funding process, a designated per-pupil funding amount is combined with an established tax rate that each public-school district must levy at the local level (Brimley & Garfield, 2008). Then, the difference between the revenue generated by the local tax rate and the minimum per-pupil funding amount is allocated by the state. This system of funding has many positive features. Relationships between the state and the local school districts are strengthened through financial interaction and dependency, because a base level of funding is guaranteed for local school districts through the state's contributions. However, the State of Illinois has been unable to fully fund the minimum foundation formula throughout the past several years as legislators have underfunded some funds, including transportation budgets (Burnette, 2016). Local school districts are mandated to match funds contributed through the foundation formula, guaranteeing a minimum level of local support for education. Theoretically, funding will be equalized across the state because a majority of state resources are disbursed to districts that have less local wealth as determined by their local property tax base. This form of wealth distribution aids districts that are at a fiscal disadvantage due to lower property valuations

and, thus, are unable to generate comparable levels of tax revenues as more property-wealthy districts (Brimley & Garfield, 2008; Odden & Picus, 2004).

In Illinois, districts collecting less than 93% of the foundation level in a given year from local property tax revenue are full participants in the state's Foundation Formula system. Illinois aggregates total local receipts per student, and then subtracts that amount from the Foundation Formula grant, and distributes the remaining amount to the local district. According to the National Education Association (NEA, 2016), the foundation formula funds 20.4% of the school districts revenue in the State of Illinois, with 71% of the revenue coming from local governments, primarily through local property taxes. This fact highlights deficiencies in the Illinois foundation funding structure. One negative is that the structure permits property-wealthy districts to expend funds substantially above the minimum resource level that the state provides. This additional revenue is most often generated through local property tax collections. These differences in local funding revenues have yielded substantial differences between the per-pupil spending among the state's school districts. As mentioned earlier, ISBE reported that a spending gap of over $24,000 separated the $30,628 spent by Rondout Elementary School District 72 and the $6,037 spent by Germantown School District 60 in the State of Illinois during the 2013-2014 school year (ISBE, 2016c). A brief glance at the list of highest and lowest spending school districts shows that affluent communities with high levels of local property wealth have been able to generate disproportionally high revenues for education with exceedingly low tax effort (low tax rates) while districts with substantially lower local property wealth are unable to raise comparable dollars despite a much higher tax effort (higher tax rate).

Another negative aspect of the foundation formula is that the nature of the foundation philosophy does not provide property-poor school districts with sufficient revenue to maintain

educational programming beyond that of a minimum level (Brimley & Garfield, 2008; Odden & Picus, 2004). Wall (2006) observed that the "low-performing districts having higher densities of minorities and low-income students also report lower per-pupil state and local revenue" (p. 256). Therefore, students who are most at risk for dropping out of high school are those who typically have the least resources allocated to their public-school districts, compared with more affluent districts (Rice, 2004). The Illinois schools and school districts most in need of higher per-pupil expenditures, due to having relatively large proportions of economically disadvantaged students, may be situated in communities least able to generate needed revenue to support their schools. Students in these districts are at the highest risk of failing to graduate from high school and are at the greatest disadvantage when it comes to social mobility opportunities (Rodriquez, 2004).

Illinois legislators have made two adjustments to the foundation formula based on the districts' local tax revenues. First, districts that collect between 93% and 175% of the foundation level with local property tax revenue are moved from the foundation grant to an alternative formula. This Alternative Formula provides these districts with between 5% and 7% of the foundation level from the State of Illinois as opposed to full foundation funding (Center for Tax and Budget Accountability [CTBA], 2006). Approximately 15% of Illinois public school districts operated on the Alternative Formula, serving almost 20% of the students in the state (CTBA, 2006).

The second alternative to Foundation Formula funding is the Illinois Flat Grant funding system. Districts collecting 175% or more of the foundation level are removed from the Foundation Formula system and provided a flat dollar grant per student (CTBA, 2006). This state contribution has averaged approximately $220 per pupil in recent history. Less than 5% of the

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school districts in the state operate on the Flat Grant system, serving just under 5% of Illinois public school students (CTBA, 2006).

In addition to the foundation formula, legislators take other factors into consideration when calculating state financial support for school districts. Factors such as the size of the school district, distribution of students in schools across the district, and grade configurations (elementary, middle, high) of the districts' schools are variables that can be used to determine weighted financial support (Carey, 2002). Illinois has a system in place that applies differential funding designations and categories to provide additional dollars to school districts to fund education beyond the minimum foundation level. In Illinois, this weighted funding also is added to the base (foundational) amount through Title I, special education, and English Language Learner categories.

Another funding mechanism available to local governments in the State of Illinois is the ability for local school boards to place a sales tax hike referendum on the county ballot. The tax hike can be up to 1%, and the funds must be used toward school facility projects. Citizens in approximately 70 of the 102 counties across Illinois have voted to approve this county sales tax since 2007 (Berg, 2017).

Illinois also supports districts by providing funding for low-income students through an allotment based upon the district's concentration of low-income students. The district's Department of Human Services 3-year average low-income count is divided by the previous year's average daily attendance, and if the district's poverty level is less than 15%, the district receives a flat minimum dollar amount (approximately $355) per low income student (ISBE, 2016b). If the poverty level exceeds 15%, the district receives the minimum grant dollar for every student in the district. The allocation can be nearly $3,000 per student in a district if the

percentage of low income students reaches 100%. It has been noted that the rates distributed by the state of Illinois are substantially below those found to be adequate or equitable. Rechovsky and Imazeki (2001) developed a research-based cost index designed to compensate for the additional costs incurred in educating low income students; using expenditures from the state of Wisconsin, they calculated a cost index of 1.59, concluding that low income students are nearly 60% more costly to educate than students of greater financial advantage. Applying this 1.59 rate to the Illinois 2016 funding formula, the foundation grants would change from $6,119 to $9,729.21 for each low-income student in Illinois. This $3,610.21 difference is substantially greater than the approximately $355 that districts currently receive and still substantially more than the nearly $3,000 districts with 100% low-income populations could receive. These calculations add to the realization that financial support for low income students in Illinois appears to be well below that which researchers consider as appropriate or equitable.

In 2016, the State of Illinois had 377 elementary school districts, 97 high school districts, and 386 unit school districts. The fact that Illinois has three types of public school districts has created additional financial inequities across the state's districts. Although elementary, high school, and unit school districts are funded using the same principles, the system has manifested itself in a manner in which students in high school and elementary districts are often funded at higher levels than 9-12th grade students in unit school districts.

According to ISBE data, Bradley Bourbonnais CHSD 307, the second-lowest ranked high school district in terms of operating expenses per-pupil, ranked higher than one third of the unit districts in operating expenses per pupil. Ranking the top 50 high school and unit districts by operating expenses per pupil, the top 10 districts are high school districts. Only 10 of the top 50

districts are unit districts, and the bottom 132 districts in terms of operating expenses per pupil are all unit district (ISBE, 2016c).

Due to specialized curricular programming that is provided in high schools, it is generally accepted that the cost to educate a student at the high school level is higher than the cost to educate an elementary student, so excluding the cost of elementary students that exist in unit districts from the operating expenses of high school districts would logically drive average operating expenses in high school districts higher. High schools' costs often include variables such as access to more technologically advanced computers or technology; specialized laboratory equipment in science; Career and Technical Education and other Science, Technology, Engineering, and Mathematics (STEM) disciplines; and the cost of athletics and extracurricular activities. However, stark inequalities also appear when comparing elementary district expenditures to unit district expenditures. When ranking the top 50 unit and elementary districts by operating expenses per pupil, the top seven districts are elementary districts. Forty-two of the top 50 districts with the highest per-pupil operating expenses are elementary districts, with only eight of the top 50 districts being unit districts (ISBE, 2016c).

As a result of these and other factors, the Illinois public school funding system has created substantial inequalities and inequities between school district budgets and per-pupil spending across the state. Baker et al. (2018) conducted an evaluation of fairness of 2014 funding distribution levels between low and high socio-economic school districts across the United States. The state of Illinois' funding distribution with regard to public education was awarded a grade of F. The report also assigned Illinois grades of F with regard to fairness and D for state effort.

Although the Illinois foundation funding system has several positive features, the system has manifested itself in a manner that has produced some of the most unfair funding practices between high- and low-poverty school districts in the nation. Rothstein (2000) described these problems as being associated with the state's heavy reliance on local property tax revenue as the primary source of educational funding.

Challenges to Illinois School Funding and Reform Efforts

There is a significant difference in the achievement gap between poor and non-poor students in the Illinois public school system as well (ISBE, 2016a). A significant amount of research exists regarding economically disadvantaged students and their educational experiences. Many studies are qualitative in nature and seek to shed light on the communities in which economically disadvantaged students live and learn and how many variables influence their learning and achievement. Low family income linked to lower economic support for local schools can present numerous challenges for school systems, including lower availability of qualified and experienced teachers, diminished exposure to educational resources, technology, and courses offered for study (Yeung, 2008). Diminished resources affect educators' ability to provide excellent teaching and learning opportunities for students. Cech (2007) stated that higher proportions of teachers trained in math and science education, smaller classroom sizes, and provision of science resources such as laboratory equipment and textbooks are characteristics of schools with excellent math instruction. Economic deficiencies at home and at school can lead to situations in which the resources for optimal student learning are lacking within both the home and school environments. These deficiencies have led critics to claim that the present system of public school funding in Illinois perpetuates socioeconomic discrimination by denying

marginalized children equitable access to a quality education (*Chicago Urban League and Quad County Urban League v. State of Illinois and Illinois State Board of Education*, 2008).

Section 1 of the Illinois State Constitution does not unambiguously name public education as a fundamental right. As a result, when the system was challenged in 1990 in *Committee for Education Rights v. Edgar* (1996), the Illinois Supreme Court rejected the assertion that Illinois' system for funding public education was unconstitutional and held that the process of reform must be undertaken in a legislative forum rather than in the courts. In 1995, students in East St. Louis District 189 filed a lawsuit against ISBE and East St. Louis School District 189 in *Lewis E. v. Spagnolo* (1999), maintaining that inadequate state funding had led to outdated textbooks and inadequate facilities. After a 4-year court battle, the court reiterated what was ruled in *Committee for Education Rights v. Edgar* that education is not a constitutional right in Illinois, and therefore, no violation of the constitution existed. Through its rulings in these two cases, the Illinois Supreme Court placed the obligation for the creation and maintenance of any school funding system directly in the hands of the Illinois General Assembly.

A new challenge more recently arose in the Illinois courts. In 2008, the Chicago Urban League filed suit in *Chicago Urban League, et al. v. State of Illinois, et al.* arguing that the current funding system is not a violation of Section 1 of the Illinois State Constitution, but rather that the system has created inequities that violate the Illinois Civil Rights Act of 2003. The complaint cites many of the issues previously reported in this paper, focusing on the underfunding of majority-minority school districts through the state. In February 2017, the Chicago Urban League settled the case outside of the Cook County Circuit Court, ending the lawsuit against the State of Illinois. The settlement highlighted the fact that the ISBE would no longer use proration of funds during years when the Illinois General Assembly failed to fully

finance the General State Aid formula for education, and that the ISBE would instead use other methods to distribute financial resources in years when GSA was not fully funded (ISBE, 2017a).

Plaintiffs in *Carr v. Koch* (2012) argued that with the advent of the Illinois Learning Standards, the ISAT, and the PSAE, local school districts no longer exercised local control over education. The plaintiffs maintained that this change in control nullified *Committee for Education Rights v. Edgar*, whose purpose had been to promote local control over education. The court again found in favor of the state, stating that the state funding structure is written to fund schools and does not apply to how residents are taxed locally.

In 2017, senators and representatives in the State of Illinois passed an "evidence-based model" of funding designed to deliver additional funds to property-poor school districts (ISBE, 2017b). Governor Bruce Rauner signed the bill on August 31, 2017, ushering in a new funding formula for public education in the State of Illinois. Representatives, senators, and the governor alike touted the bill as an answer to the state's funding inequities, with state Senator Andy Manar commenting, "There will not be another generation of students that are subjected to inequity, the worst in the country, after this bill becomes law" (Garcia, 2017).

Illinois Educational Reform

Representatives of the State of Illinois began the process of establishing a set of learning standards shortly after the publication of *A Nation at Risk*. In 1985, 34 state learning goals were adopted, establishing the state's first set of learning standards; in 1997, ISBE adopted the newly developed Illinois Learning Standards (ISBE, 1997). According to the Introduction to the 1997 Illinois Learning Standards, these standards were designed to reach beyond the teaching of content alone and to promote the use of technology and other resources while also establishing

high accountability standards. The introduction also contained verbiage that emphasized the fact that a variety of assessments would be used to measure student achievement over time, including formative classroom assessments, state, and national assessments. After the Illinois Learning Standards were created and implemented, the Illinois Standards Achievement Test (ISAT) exam was created, aligned to the standards, and administered from 1998 to 2014 at the K-8 levels. The formation of these standards established an accountability measure for the first time in the state, stating that students, teachers, parents, school administrators, school boards, legislators, taxpayers, employers, college admissions officers, and the state education agency "all have some level of accountability for the results of education" (ISBE, 1997, p. 7).

The reauthorization of the Elementary and Secondary Education Act (ESEA) in 2001, commonly referenced as No Child Left Behind (NCLB), motivated states to implement reading and mathematics tests for all students in grades 3-8 and at 11th grade in high school. The Prairie State Achievement Exam (PSAE) was created and implemented in 2001 at the high school level in Illinois. The exam was composed of the ACT, several WorkKeys exams, and a Science exam to assess student learning (the science portion was added in 2006-2007). The PSAE was composed primarily of nationally normed assessments (the ACT and the WorkKeys portions) and not on assessments tied directly to the Illinois Learning Standards. The only portion of the PSAE that was created specifically for the State of Illinois and aligned with Illinois Learning Standards was the Science exam. Thus, the PSAE was not created from or aligned directly to the Illinois Learning Standards. Although the lack of direct alignment hinders research into high school student performance with regard to the Illinois Learning Standards, the opportunity for researching student achievement across the state at the high school level has been available for over a decade, through the administration of the PSAE. Policymakers sought to solve the

persistent problem of consistently low student achievement scores in some areas of the nation, especially by many minority and special needs students. One of the major provisions of NCLB was its requirement that states have uniform within-state accountability systems (U.S. Congress, 2001).

Federal funding for NCLB was at the categorical level, similar to compensatory education (Title I), school lunch programs, and early childhood education. Categorical aid provides the federal government with power and oversight in determining where funds are to be spent (Brimley & Garfield, 2008). Ultimately, NCLB established an assessment and accountability system that encompasses all public schools in the nation by tying federal funds to the fulfillment of NCLB requirements.

As was previously noted at the high school level, Illinois implemented the 2-day Prairie State Achievement Exam (PSAE). Curriculum experts and Illinois teachers developed the Illinois Learning Standards in collaboration with ISBE, and the PSAE measured individual achievement for students in grade 11 relative to those standards. Over time, the PSAE assessment included reading, mathematics, and science and periodically included assessments in writing at various times throughout the history of its administration. As of 2014, the PSAE included three components that assessed student understanding of the Illinois Learning Standards. Day one of the exam included the complete ACT exam (containing reading, English, mathematics, science reasoning, and the writing assessment), and day two included three ACT WorkKeys assessments (reading for information, applied mathematics, and locating information) in addition to the State of Illinois Science Exam. As of 2014, the PSAE was composed primarily of nationally normed exams (the ACT and the WorkKeys portions) and not assessments tied directly to the Illinois

Learning Standards. The only portion of the PSAE aligned directly to Illinois Learning Standards was the Science exam.

Families and schools received the ACT results from day one of the exam, and overall PSAE results were reported by subject according to four performance levels: exceeds standards, meets standards, below standards, and academic warning. The results were designed to give parents, students, teachers, and schools a measure of student learning and school performance. PSAE results for specific student demographic groups were tracked for purposes of assessing adequate yearly progress (AYP) of schools, and were included in each school and district's Annual School Report Card. Student subgroups were divided by race/ethnicity (six groups), low income status, students with disabilities, and limited-English proficiency. ISBE reported 2,054,155 students enrolled during the 2012-2013 school year (ISBE, 2013). The percentage of students in each of the subgroups designated in the Illinois State Report Card in the 2012-2013 school year is listed in Table 1.

Table 1

2012-2013 State of Illinois Percentages of Enrolled Public School Students

Subgroup	Enrollment percentage
White	50.6
Black	17.6
Hispanic	24.1
Asian	4.3
Native Hawaiian/Pacific Islander	.1
Native American	.3
Multi-Racial/Two or more races	3.0

Recently, the standards and the testing environment has changed in the State of Illinois with the adoption of the new Common Core Learning Standards, the implementation of ESSA, the administration of the Partnership for Assessment of Readiness for College and Careers (PARCC) exam, and transition to the administration of the SAT exam as the 11th grade state assessment. In 2010, ISBE followed a national trend and adopted the Common Core Standards for mathematics and language arts and pledged to use the PARCC exam for assessment of Illinois public school students. State policymakers supplemented those standards with the adoption of the Illinois Science Standards in 2014. ESSA was signed into law by President Barak Obama in December 2015, reauthorizing the Elementary and Secondary Education Act. ESSA upheld many of the requirements of NCLB, including the requirement of statewide assessments and many of the student demographic reporting requirements. However, ESSA did provide flexibility to many states regarding specific requirements of NCLB in return for state generated plans that were designed to close achievement gaps (U.S. Congress, 2015).

The PARCC exam was first administered in Illinois in spring 2015, and dramatic inconsistencies were found in test results throughout the state. Assessed populations included selected students in 11th grade English, Algebra II in grades 9-11, ninth grade English, and Algebra I in grades 9-11. In addition, some student populations were assessed using paper and pencil exams while others took the exam online. One year later in 2016, the second administration of the PARCC exam occurred, again with selected students in the subjects of 11th grade English, Algebra II for grades 9-11, ninth grade English, and Algebra I in grades 9-11. In 2016, all students in the state were assessed using an online assessment. The wide variation in administration and student groups tested during the first 2 years of PARCC assessments led one

to view the results from these initial years with a highly critical eye and could challenge the conclusions drawn from its data sets.

To compound the situation, the Illinois State Superintendent announced that Illinois public high school juniors would no longer take the PARCC exam after 2016 and instead would be taking the SAT exam in order to fulfill the state assessment requirement (Smith, 2016). This switch once again changes the annual assessment process, creating difficulties with longitudinal analysis of data and attempts to determine trends in Illinois high school students' achievement as students and educators adjust to the new assessments.

Until recently, there has been little empirical research using statewide assessment data specific to Illinois. Previous research conducted over 15 years ago examined student performance on the Illinois Goals Assessment Program (IGAP) exam (Grace, 2002; Sharp, 1993); this assessment was developed and administered before the creation of the Illinois Learning Standards in 1997. Other research using Illinois achievement data and financial inputs during this time period included self-selecting student populations. Frank (1990) used data from ACT administrations in Illinois from 1986 to 1989, and Rich (1999) used data from Illinois and Michigan from 1994 to 1997.

Two researchers have recently sought to address the lack of school funding research specific to Illinois. DiGangi (2017) investigated the relationship between socioeconomic status (SES), school funding, and student achievement of 373 elementary school students in the state of Illinois. Using data from the 2013-2014 ISAT exam, DiGangi first examined the relationship between individual student SES and student achievement, concluding that "students from low-income families consistently score below average" (p. 16). She found that when entire schools experience high levels of poverty, "there are consequences to SES segregation, specifically that

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there can be positive effects when individuals of low SES are in school with students of high SES" (p. 21). DiGangi then researched public school funding and identified significant legal challenges to funding systems at the national and state levels. She specifically highlighted past legal challenges in Illinois. DiGangi summarized the funding system in the State of Illinois, focusing on its reliance on local property taxes and providing examples of the significant inequities that exist between school districts in Illinois. She researched school funding reform efforts, and recommendation from policy groups over the past two decades. DiGangi concluded that significant achievement gaps exist between low SES students and high SES elementary school districts.

DiGangi (2017) also identified a significant positive relationship between individual low-income and low-income district percentages, suggesting low-income students often attend low-income schools that are in turn funded at lower rates. Her research also identified an increase in funding inequality between school districts in Illinois between 2003-2004 and 2013-2014. She identified a significant negative relationship between low-income district percentage and individual low-income percentage and student achievement on both the reading and math portions of the ISAT. DiGangi also found that increases in per-pupil expenditures result in improvements in student achievement. She estimated that in mathematics, a low-income student would need an additional $7,755 to attain the non-low-income White student's expected score, and $9,047 to achieve a White non-low-income student's score in reading.

Krause (2017) examined if a relationship existed between specific school budget categories related to per-pupil expenditures and achievement for all 100 Illinois high school districts as indicated by average ACT composite scores for 2002-03 and 2013-2014, which were the first and final years of NCLB. Krause found a significant relationship between student

achievement and educational resources, with positive correlations existing between Student

Support Expenditures, Instructional Expenditures per-pupil, and Equalized Assessed Valuation,

and ACT composite scores. Krause also found a significant negative correlation between the

percent of Low-Income Students and General Administration Expenditure per-pupil and the and

the composite ACT scores for the 2002-2003 and 2013-2014 school years. Krause's work has

partially addressed a gap in the research by showing the relationships between financial inputs

and the achievement of Illinois high school students attending high school districts on the ACT

portion of the PSAE exam. My study addresses the remaining gap in the research that was not

explored by DiGangi and Krause: the relationship between financial inputs and the achievement

of Illinois high school students attending unit school districts, as measured by the ACT

composite score averages.

Applications of Education Production Function Analysis

Product functions originated in the business world as a mathematical approach to relate

outcomes to a variety of input combinations (Monk, 1989). Some researchers have chosen to use

production function analysis to directly relate inputs (directly or not directly controlled by

policymakers) to student achievement. Monk (1989) pointed out the value of such a pursuit:

"With this knowledge, administrators can make accurate assessments of efficiency, and have the

requisite knowledge to effect improvement" (p. 32). He observed that a single function may not

fit all students in all situations. The pursuit of education production functions does not represent

a single answer for all students and school systems; rather, it is a pursuit of functions that may

relate to varied students and student characteristics.

Over time, researchers have applied education product functions to provide a standard

against which achievement is to be measured. These studies often stressed accountability and

promoted more effective use of school resources (Coleman et al., 1966; Hanushek & Rivkin, 1996). Others (Hedges, Greenwald, & Laine, 1996a, 1996b) have refuted the use of data to provide achievement standards, seeking relationships between inputs and student achievement data while refraining from judging whether districts are using funds efficiently or effectively. Results of these studies have varied, with some finding no relationship between inputs and student achievement (Hanushek & Rivkin, 1996) while others report statistically significant relationships between inputs and student achievement (Hedges et al., 1996a, 1996b). Still other studies have returned mixed results (Coleman, 1966; Knoeppel, Verstegen, & Rinehart, 2007), adding to public confusion. The resulting lack of clarity over the effects of educational financial inputs, specifically money, on student learning and performance has eroded public confidence in the assertion that money matters in education.

Some researchers have taken a large-scale view of education, seeking to use national data or meta-analyses to evaluate education production (Hanson-Taylor, 1998; Hanushek, 1986; Jones & Gilman, 1993; Verstegen & King, 1998; Wenglinsky, 1997). Use of national data or meta-analysis often can present issues when involving students, schools, districts, or systems that operate under different policy structures and with different measurement systems that may not correlate precisely. Hanson-Taylor (1998) pointed out that "differences in the findings of the individual educational production function studies may be attributed to a host of differences in their empirical specifications" (p. 167). Hanushek (2008) noted, "the later problem of imprecise measurement of the policy environment can frequently be ameliorated by studying performance of schools operating within a consistent set of policies" (p. 5). As a result, comparisons made in some education production studies may suffer from quality issues, and focusing on school systems within a single policy environment or state may alleviate some of the challenges

presented when comparing "value added" estimates as opposed to simply "level" comparisons. Verstegen and King reviewed 35 years of Education Production research and conducted a meta-analysis in 1998. The authors used data from 11 different studies, and concluded that financial inputs do indeed positively relate to student achievement. The authors also cautioned that while there were positive correlations between economic inputs and student achievement, "resource patterns that make sense in one school setting do not necessarily translate to other communities" (Verstegen & King, 1998, p. 261).

Numerous studies have examined specific states and possible links between funding/ expenditures and student achievement. These studies have provided mixed results as they have focused on a variety of student groups across the country, often sampling smaller or targeted portions of the population (Heinbuch & Samuels, 1995; Woods, 2006). The types of measuring tools used in the studies vary as well, including the use of nationally normed examinations; state-created exams; and metrics such as student grades, attendance rates, and college graduation rates.

Often, researchers have relied on data that are readily available, with statistics on graduation rates and attendance rates accessible in the 1960s and 1970s. As universal state testing became more common in the 1980s and 1990s, state and national data sets that contained state or national assessment data sets were made accessible to researchers. Up until the late 1990s, national exams such as the ACT and SAT primarily were taken by college-bound students, resulting in self-selecting populations completing these exams. Some researchers used these available data to evaluate relationships between inputs and standardized test scores (Freeman, 2009; Frank, 1990; Heinbuch & Samuels, 1995; Jones & Gilman, 1993; Napier, 1997; Rich, 1999). Conducting comparisons across states is possible for those state education departments mandating the ACT as part of their annual statewide testing of all high school

juniors. Statewide adoption has provided statewide data sets of student test data, accompanied by attendance rates, graduation rates, and student demographic data for entire grade levels of students within given states. These massive data sets have presented an opportunity for more robust analysis of student achievement data. However, despite expanded access to large data sets, researchers differ in their approaches to analyzing the connections between economic education inputs and student achievement. The following literature review provides varying perspectives of scholars and critiques the validity of those arguments.

The first modern example of the use of Education Production Function Analysis came in response to the Civil Rights Act of 1964. The Equality of Educational Opportunity Study (EEOS) was commissioned by the U.S. Congress in 1966 to assess the availability of quality education to children across the United States. The final report, often called "The Coleman Report," represented a landmark national study as it analyzed a variety of outcomes and attempted to relate them to financial inputs (Coleman et al., 1966). Researchers used multiple data sources and included over 650,000 students in this study. Quantitative data such as test scores were included, and qualitative data was gathered through questionnaires. The researchers concluded that school and teacher quality had a small positive impact on student performance. Some of the report's findings proved controversial at the time, with researchers concluding that African American students showed small benefits from non-segregated classrooms. Overall, researchers concluded that few inputs outside of socioeconomic background and racial makeup explained variations in student achievement (Coleman et al.). The Coleman Report provides the most significant snapshot of education during the 1960s, and many findings have likely changed over time as a result of many of the inputs changing.

At approximately the same time the Coleman Report was announced, the U.S. Congress passed the first of several national education reform acts, the Elementary and Secondary Education Act (ESEA) of 1965. ESEA represented the first time the federal government sought to equalize opportunities for all students, and it was a part of President Johnson's "War on Poverty." Through the ESEA, additional resources were focused on education as a means by which children could escape poverty. The ESEA provided grant funding for states and earmarked funds for educational programs for low income and minority children with the hope that by increasing funding the educational performance of underserved populations would improve.

The use of Education Production Function Analysis as a way to measure educational efficiency was in its infancy during the 1960s and 1970s, and relatively few significant large-scale studies beyond the Coleman Report were produced during this time period. The research landscape began to change nearly 20 years later with the advent of federal education reforms in the 1980s.

Early in his first term, President Ronald Reagan commissioned a study by the U.S. Department of Education targeted at educational inputs and outputs associated with secondary education. The result was the publication of *A Nation at Risk* (NCEE, 1983). The task force report identified several risk factors that affected public education and recommended areas for improvement. Risk factors included poor postsecondary educational performance by students and the need for remediation in reading and mathematics prior to postsecondary careers and military service. Recommendations included the need for curricular improvement, increasing the rigor of core content standards and their alignment to standardized assessments, and better teacher training. During the 1980s Education Production Function research increased in

frequency throughout the nation. Researchers began to use a wider array of national, state, and local data sources to measure student achievement as it related to expanded inputs.

Many researchers during the 1980s and 1990s concluded that there was either no correlation or mixed results between financial inputs and educational outcomes. Childs and Shakeshaft (1986) conducted a meta-analysis of research dating back to 1928, finding there was a correlation between funding and achievement. Hanushek (1986) conducted a series of analyses from which he cultivated several conclusions about the relationship between school expenditures and student achievement. In his meta-analysis, Hanushek analyzed 147 studies of separately estimated educational production functions, concluding that educational expenditures in the areas of lower teacher/student ratios, teacher education, and teacher experience were not positively correlated to increased student achievement. However, in a reanalysis of his data, other researchers subsequently identified a positive relationship (Hedges, Greenwald, & Laine, 1994). In spite of this contradictory finding, Hanushek's research proved to be some of the most influential of the time, with education leaders such as William Bennett often using his findings to influence national policy (Baker, 1991). In a 1989 study, Hanushek identified a strong positive affiliation between school expenditures and student achievement (Hanushek, 1989). However, Hanushek observed that the strength of the relationship disappeared when controlling for differences in family background, leading him to conclude that there is no positive relationship between increasing educational expenditures and increased student achievement. Hanushek followed these two studies with a 1996 meta-analysis of 163 different studies, finding that only 27 demonstrated significant, positive correlations between expenditures and student achievement, while seven studies produced negative correlations. The remaining 129 studies found no significant correlations. While Hanushek and Rivkin (1996) affirmed that that some

studies did show positive relationships, Hanushek again maintained that there is no significant overall positive correlation between education expenditures and student achievement. However, some researchers soon challenged Hanushek's methodologies and his conclusions (Alexander, 1998). Verstegen and King (1998) reviewed 11 studies and concluded that there was a significant relationship between funding and achievement.

During the 1980s and 1990s, some states, including Illinois, began to develop and implement state assessments for public school students. Perkins (1992) and Sharp (1993) utilized data from these state assessments as measures of student performance in the elementary and middle school grades, while other researchers utilized data from the SAT and the ACT as a measure of student performance (Frank, 1990; Jones & Gilman, 1993; Rich, 1999). Each study concluded that there was either no correlation or a negative relationship between funding inputs and student achievement on these state assessments.

Limited data availability proved to hamper larger scale utilization or application in several studies. Frank (1990) analyzed a variety of input variables and ACT scores from 1986 to 1989 in the state of Illinois; at that time, the ACT exam was optional for Illinois high school students. The student population taking the exam was self-selecting, meaning that the typical test-taker considered him/herself "college bound." The self-selection of students with regards to taking the exam left a significant number of groups absent from his data set, including students who did not have the interest, financial means, or other necessary tools to attend a postsecondary institution. Frank found that overall, as per-pupil expenditures rose, district ACT scores rose. However, he did find that there were variations from the overall pattern, especially among unit school districts where there was a negative correlation for up to 3 of the 4 years included in the study.

In a doctoral study, Perkins (1992) investigated the relationship between instructional expenditures and student achievement in 50 Illinois school districts near St. Louis, Missouri, utilizing student scores on the eighth grade PSAE, a norm referenced exam from the 1987 ISBE School Report Card. This assessment was created well before the Illinois Learning Standards of 1997 and was not specifically tied to them or any current state or national standards. Regardless of this fact, Perkins concluded that there was not a statistically significant relationship in these 50 school districts between per-pupil instructional expenditures and student achievement in reading or in mathematics.

One example of research that did use statewide data sets was Sharp's (1993) examination of the relationship between Illinois schools' expenditures per-pupil and students' state assessment exam scores on the Illinois Standards Achievement Test (ISAT). Data was taken from the grades 3, 6, 8, and 11 state mathematics exam and grades 3, 6, and 8 language arts exams. Sharp used a Pearson r correlation analysis, concluding that there was no significant correlation between spending and achievement in Illinois. He cautioned that "giving schools more money without targeting areas which directly affect student achievement will not automatically cause student achievement to improve" (p. 11). As a result of his work, Sharp suggested that when districts receive additional money, it should be spent on specific programs as well as providing additional supports to students in order to improve their achievement.

Jones and Gilman (1993) examined data from all 50 states and the District of Columbia to find a relationship between per-pupil funding and college placement test scores in the 1990-1991 school year. During the 1990-1991 school year, the population of students taking the SAT was "college bound" in nature and was self-selecting across the nation, and again excluded several subgroups of students. The authors themselves recognized the limitations of this self-

selecting population in their conclusions, but signified, "another alternative achievement measurement which applied to the entire sample was not found" (Jones & Gilman, p. 10). One major assumption of the authors was that expenditures had single year effects on student achievement. Ultimately, the authors found a negative correlation between expenditures and SAT scores, and they questioned whether this relationship would be maintained if expenditures were targeted directly on student populations who were taking the SAT exam.

Rich (1999) examined relationships between state funding in Michigan and Illinois and student achievement in those two states using average ACT composite scores as a measure of student achievement. In 1999, the ACT was administered to 68% of Michigan high school graduates and 69% of Illinois high school graduates. The data set was made up primarily of "college bound" students, excluding students who may not have had interest, means, or tools to attend a postsecondary institution. Rich found that no statistically significant relationships existed between state or district funding levels and student achievement for the population studied.

One of the most common input variables included by researchers during this time period was overall per-pupil funding (Jones & Gilman, 1993; Frank, 1990; Rich, 1999; Sharp, 1993). Researchers used the total dollar amount allocated per student as an input variable as they sought possible correlations between inputs and student performance on statewide or national assessments. However, per-pupil funding includes both instructional and operational costs and can be skewed in cases in which large "one time" capital outlay projects or major grant funding are included. Some researchers, including Frank (1990) and Perkins (1992), chose to address this problem by including multiple instructional line items as inputs, seeking to eliminate extraneous variables that may be contained in the overall per-pupil funding. Frank included a variety of

financial inputs, while Perkins utilized 50 budgetary items that he defined as having a direct influence on student learning. The studies found at best a mixed relationship, but often no correlation or even a negative correlation between financial inputs and student achievement. Perkins, Sharp, and Rich all found no relationship between financial inputs and student performance outcomes. Frank found that overall, as per-pupil expenditures increased, district ACT scores rose. However, he did find that there were variations from the overall pattern, especially among unit school districts, in which there was a negative correlation for 3 of the 4 years included in the study (Frank, 1990). Jones and Gilman found a negative correlation between expenditures and SAT scores; however, they questioned whether this relationship would be maintained if expenditures were targeted specifically on student populations who were taking the SAT exam.

Other researchers chose to broaden their investigations to incorporate additional inputs, searching for relationships between alternative inputs and student achievement. Some of these studies found little or no correlation between financial inputs and student achievement. In 1989, researchers in New York conducted the Educational Resource and Outcome Project to investigate the threshold of funding needed by low-income school districts to improve student performance and achievement. Spottheim (1989) used two models, with one relating 400 financial variables and educational outcomes for students; the second model used resource allocation and a goal programming technique. Using data from 200 New York school districts, Spottheim found a positive relationship between expenditures and student achievement and suggested that a 67% increase in expenditures would result in a 15% increase in student performance. Spottheim suggested direct allocation of funds to specific categories and utilizing economies of size to create greater payoff for dollars invested, and also suggested that many non-

financial variables (that were left undefined in the study) may have a greater impact on student achievement then the financial inputs.

Snyder (1995) investigated relationships between per-pupil funding levels and achievement levels of students in Michigan school districts. Snyder used average teacher salaries, per-pupil expenditure in operating and instructional categories, and evaluated them against 12 sets of scores gathered from the 1992 Michigan Educational Assessment Program (MEAP) exams, which are administered to students in grades 4, 5, 7, 8, 10, and 11. Snyder found no statistically significant correlation between any of the funding categories and student achievement.

Other studies during the 1980s, 1990s, and 2000s found evidence that a positive correlation exists between financial inputs and student achievement. Many researchers utilized data from state wide assessments as a measure of student performance (Grace, 2002; Kenyon, 2001; Lockwood & McClean, 1993; Stegmaier-Nappi, 1997; Thompson, 2003). However, limited data availability proved to hinder large-scale utilization or applications for many studies that showed a positive relationship between financial inputs and student achievement, just as it had for studies showing no relationship, a mixed relationship, or a negative relationship. Lockwood and McLean (1993) conducted a study of students in grades 4-8 in 128 Alabama schools, comparing educational expenditures spent directly on students to student achievement on the Stanford Achievement Test. The authors concluded that a positive relationship existed between the targeted expenditures and student achievement. Grace (2002) used results from the state designed Illinois Goal Assessment Program (IGAP) exam for grades 3, 6, 8, and 10 between 1994 and 1998. Grace concluded that a significant positive correlation existed between expenditures on direct instruction and student achievement for regular education students.

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Three studies during that time that utilized more robust state-wide datasets were those conducted by Stegmaier-Nappi (1997), Kenyon (2001), and Thompson (2003). Stegmaier-Nappi collected data from the California Achievement Test (CAT) in the Southwell School District in California, and analyzed program development funds, auxiliary personnel, social workers, therapists, psychologists, evaluators, and materials to study a correlation between those inputs and grade level achievement scores. Stegmaier-Nappi found that per-pupil cost was the most important predictor of CAT scores at the 10th grade level, while funds spent on program development, auxiliary personnel, social workers, therapists, psychologists, evaluators, and materials was the most important predictor of success on the California Achievement Test scores in grades 2, 4, and 6. The percentage of students in accelerated programs was an important predictor variable of CAT scores at all levels (Stegmaier-Nappi, 1997). These findings emphasized that money spent on specific programs can be significantly correlated with student achievement.

Kenyon (2001) used statewide data to research relationships between financial inputs and student achievement in Arizona. Data from the Arizona Department of Education were used for an Education Production Function study of several inputs and student achievement of Arizona public schools. He used a multiple regression statistical design to study the relationships between the inputs of percent free and reduced lunch (used as a control variable for socioeconomic standing), average teacher-salary, teacher-to-pupil ratio, total certified staff-to-pupil ratio, administrator-to-pupil ratio, classified staff-to-pupil ratio, total staff-to-pupil ratio, type of district, gross square footage of facilities per student, total actual expenditures per student, and maintenance and operations actual expenditures per student. As a measure of student achievement, he used data from all 207 public schools in the state that reported their Stanford 9

normal curve equivalent (NCE) scores to the Arizona Department of Education. His analysis

demonstrated mixed results, claiming:

> Maintenance and operating actual expenditures per-pupil was found to be related to student reading and language achievement in second through seventh grade, teacher to pupil ratio was found to be related to student reading achievement in grades five through eight, no relationship was found between student achievement and total classified ratio, total staff ratio, total certified ratio, average teacher salary, district type and gross square footage per-pupil. As expected, the control variable percent of students on free and reduced lunch was highly related to student achievement in reading, language and math. (Kenyon, p. iii)

Thompson (2003) used data from the 2000-2001 school year to evaluate possible

relationships between educational expenditures and student achievement on the Tennessee

Comprehensive Assessment Program (TCAP) and the Tennessee Value Added Assessment

Program (TVAAS). The sample included all of Tennessee's 137 public school districts and

examined K-5 student performance in reading and math. Thompson found that educational

expenditures and teacher salaries showed a significant, positive relationship to student

achievement (Thompson).

Some researchers (Hanson-Taylor, 1998; Wenglinsky, 1997) moved away from utilizing

state assessment data during the 1990s and utilized data from national databases as a measure of

student performance and achievement. Both studies found mixed results with regard to financial

inputs and student achievement. Wenglinsky (1997) analyzed the national database of school

expenditures from the U.S. Department of Education and data from the National Assessment of

Educational Progress (NAEP) test for relationships between expenditures and student

achievement. Data from fourth and eighth grade students were analyzed in the study.

Wenglinsky found mixed results, with positive correlations for increased funding for instruction

and school district administration (which affected student to teacher ratios). Increased

investments in capital outlays, school level administration, and teacher education levels were not

found to increase student achievement. Hanson-Taylor used data from three national databases, including the National Education Longitudinal Study of 1988, the Common Core of Data, and a district-level Teacher Cost Index. The outcome used was the 1992 student results on the mathematics portion of the National Education Longitudinal Study exam. Hanson-Taylor found that per-pupil expenditures generally have a small, positive, and statistically significant effect on high school student mathematics achievement. She also found that differences in resource costs and the proportions of special needs students have little impact on the findings. Overall, the results showed that while the influence of increasing school expenditures has a small, statistically significant effect, that effect can differ across states and school settings.

Other researchers during the 1990s utilized meta-analytic approaches to find possible correlations to financial inputs and student performance. Hedges et al. (1994) reanalyzed Hanushek's data; they concluded that Hanushek was incorrect with some of his methodological approaches and found systematic positive patterns between educational inputs and student achievement outcomes. A second meta-analysis was conducted by Hedges et al. in 1996, including 60 primary research studies, finding that a wide range of resources were positively related to student achievement. The effect sizes from this study were sufficiently large to suggest that moderate increases in spending may be associated with significant increases in achievement (Hedges et al., 1996a). At the time of this study, the professional debate had reached a heightened level with the second meta-analysis, research by Hedges and his team (Hedges et al., 1996b), and the publication of Hanushek and Rivkin's (1996) study mentioned earlier in this review.

Although the overall body of research during the 1980s and 1990s was inconclusive regarding the issue of educational funding and student achievement, numerous researchers found

positive relationships between several financial inputs and student achievement. During this time period, researchers utilized nationwide data sets, focusing on data from individual states as well as that from national exams. At times, the extrapolation of findings was limited by the data sets utilized by researchers, but as one looks at the availability of data over time, those limitations appear as if they can be overcome by the utilization of more comprehensive data sets that have become available in the 21st century. Taken in their entirety, the results were mixed and inconclusive, as research both supported and rejected the notion that financial inputs positively correlated to increased student achievement. Education reform continued to be a consistent talking point for policymakers throughout the end of the 20th century, and the ongoing debate resulted to a new set of national education reforms in the early 21st century.

In 2001, the federal government passed the No Child Left Behind Act (NCLB). A reauthorization to the ESEA of 1965, it specifically targeted the achievement gap that existed among student demographic subgroups, including socioeconomic subgroups, racial subgroups, special education students, and second language learners. It supported standards-based reform through the belief that establishing high standards and establishing goals to improve student achievement could improve student performance and close the achievement gap for all students. Part A, Subpart 1, Section 1111 of the act established a requirement that states adopt "challenging academic content standards" in mathematics, reading/language arts, and beginning in 2005-2006, science. The academic standards were then used as measures of student achievement for all students in each state. However, NCLB permitted individual states to create their own standards and to implement their own assessment devices for student achievement, creating discrepancies between states in their measurement systems. Benchmarks of student performance and measures of Adequate Yearly Progress (AYP) for student achievement in

reading and mathematics were implemented for students overall as well as for students in federally designated subgroups. Because of this need for the measurement of student (and specifically subgroup) achievement, demographic, assessment, and financial data collection requirements were put in place regarding students, schools, districts, and states.

Initially, there was optimism that achievement for subgroups would increase under NCLB directives. The National Council on Disability (NCD, 2008) remained positive on the application of NCLB because it has meant significantly better attendance by students with disabilities and attention to their academic progress. However, the NCD was unable to report any highly significant trend in reducing the achievement gap between disabled and non-disabled populations. Overall, data regarding subgroup performance during the NCLB era portrays a particularly negative picture. Data from the Illinois Report Cards from 2002 to 2014 shows that progress in closing the achievement gap for Black, Hispanic, Economically Disadvantaged, and Students with Disabilities has been minimal at best (ISBE, 2002; ISBE, 2014). Using Meets/ Exceeds scores in grade 11 reading, the gap closed slightly for Hispanic students from 30.2% to 28.6%. The achievement gaps for Black, Economically Disadvantaged, and Students with Disabilities increased during that time from 34.1% to 38.9%, 30.9% to 33.4%, and from 49.0% to 50.1%. In mathematics, the gap closed slightly for Black students from 43.4% to 42.5%, Hispanic students from 34.0% to 28.6%, and Economically Disadvantaged students from 36% to 35.8%. The gap for Students with Disabilities increased from 49.0% to 52.1% over that time. Regarding racial achievement gaps, Reardon, Greenberg, Kalogrides, Shores, and Valentino (2013) reported that little progress has been made nationwide at reducing achievement gaps, noting their analyses "provide no support for the hypothesis that NCLB substantially narrowed racial achievements gaps, on average" (p. 1). Taken as a whole, data suggest that there have been

no significant reductions in achievement gaps of subgroups in Illinois or across the nation since the advent of NCLB and ESSA, its subsequent reauthorization.

The established requirements for data collection and for standardizing student assessment within each given state provided extensive data sets for researchers in the 21st century. With this in mind, researchers have been able to conduct extensive analyses with the new data sets over the past decade, not only investigating relationships between education finance and overall populations but also between education finance and specific subgroup data that was not previously available.

There has been a marked increase in the amount and variety of educational production research being conducted during 21st century. With additional information available, researchers have investigated multiple financial inputs, including total per-pupil expenditures (Oberhaus, 2008; Price, 2012; Resch, 2008), instructional per-pupil expenditures (Oberhaus, 2008; Lianides, 2006), and operational expenditures (Oberhaus, 2008), as well as restricted and unrestricted funding (Lianides, 2006). Other researchers increased the volume and variety of research by incorporating even more input values, with Walters (2005) using 57 inputs in his study.

Researchers also demonstrated a marked increase in the number of outputs included for analysis in their studies. Overall student performance as well as the performance of subgroup populations were evaluated in many of these studies. With that in mind, results tying the wide variety of inputs to the wide number of student subgroup populations continued to be mixed.

Lianides (2006) studied the relationship between the unrestricted revenue per student in the state of California and student academic achievement on the California state Academic Performance Index (API) during the 2003-2004 school year. The API is a composite calculation based on the State of California Content Standards Test. The author used data from 971 school

districts that graduate just over half of the students in the State of California annually. The author was somewhat limited by the availability of data for some school districts within the state, and also excluded county and charter schools from the study. Lianides' findings supported a positive relationship between the amount of unrestricted funding per student and student achievement, while no relationship was found between restricted funding and student achievement. A stronger positive correlation was found between unrestricted funding levels directly tied to classroom instruction and student achievement.

Oberhaus (2008) examined data from the ISBE Annual School District Report Card database, using enrollment, operating expenditures per-pupil, instructional expenditures per-pupil, percent of instruction expenditures per student, and student achievement data from the Illinois Student Achievement Test (ISAT) and the PSAE. He showed a negative correlation between operating expenditures per-pupil and student achievement. He also showed a significant positive relationship between instructional expenditures and overall student achievement. Finally, he disaggregated data from districts that spent greater than or less than 65% of their funds on instruction, finding that while increasing the percentage of funds on instruction appears to lead to higher student achievement, this may not necessarily hold when the percentage of the overall budget surpasses 65%.

Resch (2008) conducted research into funding and student achievement in light of the *Abbot v. Burke* case in 1997 in New Jersey. Resch found that funding improved by approximately $1000 per student for 30 of the neediest school districts in the state after the court ruling and that the increase in funding resulted in improved math performance overall, and improved math and reading achievement for Black and Hispanic students at the 11th grade level.

In addition, the achievement gap at the elementary level between the recipient districts and other (more financially able) districts closed over time in both reading and math.

Price (2012) compared funding in 40 school districts in the state of South Dakota in the 2003-2009 school years and the Dakota State Test of Educational Progress (STEP) assessment. He found a significant positive correlation between per-pupil funding and overall student achievement in math. This was also true for low-socio-economic status students and students with IEPs. However, Price found no significant relationship between per-pupil expenditures and reading scores.

Walters (2005) studied data from all 308 public school districts in the state of Arkansas from the 2003-2004 school year, He used publicly available data from the Arkansas Department of Education, and looked at 57 variables from each of the 308 districts. Thirteen of the 57 variables were achievement variables and 29 were cost variables. Walters was able to draw multiple conclusions about the highest performing school districts, including conclusions about common demographic and funding patterns. One of the most significant findings in the context of this research was that he found a correlation between higher financial expenditures and higher student performance in Arkansas public school districts.

Within the last few decades, Baker (2018) and Verstegen (2008) have collaborated with others to conduct extensive research into education finance. One example is research of (Knoeppel, Verstegen, & Rinehart, 2007) using multivariable analysis of financial and non-financial inputs into the educational system in Virginia. Inputs included an adjusted per-pupil expenditure (removing transportation and special education costs), student-teacher ratio, the Virginia measure of local wealth (representing the community's ability to pay for public education), average teacher salary, administrative costs per-pupil, facility costs per-pupil, and

length of the school year measured in days of attendance. Outputs included student scores in the fourth grade and 11th grade Iowa Test of Basic Skills (ITBS), the percentage of graduates with plans to attend a 2-year college, the percentage of graduates with plans to attend a 4-year college, the percentage of graduates with other college plans, and voter participation in the gubernatorial election in Virginia. The authors found statistically significant positive and negative relationships between teacher quality and local wealth and the outputs. The other variables did not show statistically significant relationships (Knoeppel et al., 2007).

Over time, each researcher has chosen to shift their focus from state assessment data and financial inputs to researching issues of equity and justice in education funding. Both scholars have conducted extensive research into funding equity across the nation, with each paying special attention at one time to funding equity between districts in the State of Illinois (Baker & Welner, 2010; Verstegen & Driscoll, 2009). Baker (2010) and Verstegen (2009) agreed that Illinois as a state has substantial funding inequities among districts, with Baker asserting that the state has actually regressed over time in its funding equity. Verstegen concluded that the Illinois system "is an unjust and disparate system that curtails equal opportunity for children and youth in schools and classrooms" (p. 58).

Education Production Function has evolved greatly throughout the past five decades, with the volume and variety of research increasing over the decades as financial, student demographic, and student achievement data have become more readily available. An array of inputs and outputs have been evaluated for a select school districts, statewide data sets, and through meta-analyses. However, these lines of research have not yet been fully explored with regard to high school student achievement in the state of Illinois. Previous studies regarding Illinois student achievement have focused on elementary students or have excluded any number

of public school students or districts. The lack of a comprehensive study including all or nearly all high school students and the evolution of comprehensive financial and student achievement data sets has created an excellent opportunity for research in the current educational environment.

Conclusion

Currently, education is awash in data with the enactment of NCLB and ESSA, as well as the mandatory testing and data collection that has come along with this federal legislation. Statewide datasets give the ability to conduct analyses on student subgroups, along with a wealth of economic and demographic information about students and school districts. The state of Illinois has been requiring all public school juniors to complete the ACT annually, providing tremendous examination consistency and reliability from year to year. This increase in available data and the ability to analyze it is especially poignant in the State of Illinois, where research shows that current funding of education has fallen short of what many deem adequate, let alone equitable for many Illinois school children.

This chapter provided a historical overview of the educational funding structure in the state of Illinois, highlighting the inequities in Illinois that have resulted from the school funding system. Challenges to the funding system were identified as well as budgetary and systematic reform efforts in Illinois. An overview of the Education Production Function was presented, and relevant research from the past 50 years regarding financial inputs and their influence on student achievement from across the United States was reviewed.

Numerous researchers have attempted to determine if education funding makes a difference in student achievement in public elementary and secondary schools. Over time, they have used a variety of inputs and have analyzed the data through a variety of research

methodologies. The most common inputs focused on per-pupil expenditures, but other variables such as socioeconomic status, facilities, demographics, and teacher quality characteristics have been used. Some researchers were limited by the data sets that were available at the time, with some data sets including a limited number of school districts, self-selecting student populations, or student achievement data that was based on "home grown" assessments of varying consistency or standards. As datasets have become more comprehensive and have permitted new analytics, researchers have used an increasing number of measures of student achievement as the outputs. The evolution of the research can be seen in this literature review, as Sharp (1993) and Jewell (1993) were able to access statewide testing data in the 1990s, and Rice (2004), Resch (2008), and Stephens (2009) in the 2000s have been able to dissect outputs for ethnic and economic subgroups in ways that were not possible in previous decades. Through the years, findings from these education finance studies have been used to lobby for changes in funding policy, as well as changes in local programs and resources.

Chapter Three

Methodology

This study was designed to investigate the relationship of public school elementary-secondary spending and student achievement as measured by the ACT. This chapter contains a statement of research questions, the research methods, the population, data collection and analysis, validity, and summary. This study was focused on public school unit districts in the state of Illinois, which contain grades PK-12.

Research Questions

This study included the following research questions:

1. What is the relationship between district spending per-pupil for the 2012-2013 school year and student achievement on Composite portion of the ACT administered during the 11th grade PSAE administration?

2. What is the relationship between district spending per-pupil for the 2012-2013 school year and student achievement on Composite portion of the ACT administered during the 11th grade PSAE administration after adjusting for poverty level?

3. For each tercile as determined by total percentage of selected subgroups (including Black, Hispanic, and Native American), what is the relationship between district spending per-pupil for the 2012-2013 school year and student achievement on composite portion of the ACT administered during the 11th grade PSAE administration?

4. For each tercile as determined by total percentage of selected student subgroups (Black, Hispanic, and Native American), what is the relationship between district per-pupil spending for the 2012 2013 school year and student achievement on the composite portion of the ACT administered during the 11th grade PSAE administration, after adjusting for poverty level?

Research Design

This ex-post facto quantitative study was correlational and non-experimental in nature. Ex-post facto research studies involve going backward in time to identify corollary factors (Leedy & Omrod, 2001). Experimental studies involve manipulating independent variables and controlling all other relevant variables (Dimitrov, 2008).

The independent variable was per-pupil instructional expenditures for all unit school districts as indicated by ISBE on each district's Illinois School Report Card. The dependent variables included the average ACT composite scores for all students, as well as the average ACT composite scores for Black, Hispanic, and Native American students. The information gathered from this study provides additional understandings regarding the relationship between school expenditures and student achievement, and completed the evaluation of high school, elementary school, and unit school districts begun by Krause (2017) and DiGangi (2017).

The relationships between the independent and dependent variables were determined using the Pearson Produce Moment (PPM) Correlation, known as Pearson's r. Pearson's r measures the correlation between two variables (Dimitrov, 2008). In this study, Pearson's r measured the degree to which student achievement was dependent upon financial investment in the form of instructional expenditure.

Measurement Instrument

The ACT is a multiple-choice assessment that has been administered for over 50 years to high school students (Jones & Gilman, 1993). Originally, the test was used as a college entrance examination, often administered to a self-selecting, college-bound population across the nation. In recent decades, some states have initiated the use of the ACT as a piece of their statewide assessment program, using it to measure student learning. Since its inception, the ACT has included sub-sections on English, mathematics, reading, and science reasoning. These sub-sections are scored individually and translated to a scale score in a 36-point scale. The scale scores are then averaged and rounded up to the next integer to calculate a composite score on the 36-point scale.

Measurement Validity

ACT has conducted extensive research on the reliability of its ACT assessment (ACT, 2013). ACT has correlated student performance on the ACT exam to student performance in postsecondary institutions through its creation of the College Readiness Benchmarks. These benchmark scores in reading, English, Math, and Science Reasoning have been created and publicized by ACT as scores that are "required for students to have a high probability of success in credit-bearing college courses" (ACT, 2013, p. 1). These benchmarks were identified through data evaluation by ACT. Students who meet an ACT Benchmark are considered to "have approximately a 50 percent chance of earning a B or better and approximately a 75 percent chance of earning a C or better in the corresponding college course or courses" (ACT, 2016b). As a result of a growing focus on college and career readiness, Illinois high school educators have become increasingly familiar with the ACT benchmarks and many have begun to use them as a measure of student college readiness in reading, English, math, and science on an annual basis.

Measurement Reliability

All data were extracted from ISBE data sets and were recorded using standardized procedures and forms through ACT or through the ISBE. The State of Illinois began requiring the administration of the ACT as a portion of the PSAE exam in 2001, with the final state-required administration of the PSAE taking place in Spring 2014 (ISBE, 2014). During that time, all 11th grade public high school students in the State of Illinois were required to take the exam, with penalties for districts that did not meet a minimum percentage of students tested on an annual basis. The scores used in this study were the scores on the final ACT each student was recorded as taking, regardless of whether that exam occurred as a part of the PSAE or during an

administration on a national testing date after the official PSAE testing date. A small percentage

of students with high levels of special needs were exempted from the exam through an

application process and subsequent approval from ISBE. Also, unofficial ACT scores were

eliminated from the data set, such as scores for English Language Learners who completed the

exam with specific state accommodations. The ACT was administered either within a limited

testing window prescribed by ISBE or on a national ACT testing date. Only exams administered

under standardized conditions prescribed by ACT were included in the data set. With limited

exceptions for absent students or up to 1% of each district's students taking alternative state

assessments due to Individualized Education Plan (IEP) requirements, the ISBE requirements

have led to an extensive database of student ACT performance data from all parts of the state for

over a decade.

The financial data were taken directly from each district's Annual Financial Report that is

submitted to the ISBE. The data met the requirements of the ISBE accounting requirements and

provisions of the Illinois Program Accounting Manual. Data were reported in a consistent

manner as outlined by the ISBE. The Annual Financial Reports were audited by certified public

accountants. Thus, the resulting data met requirements for consistency and reliability for school

districts across the state.

Data Collection and Analysis

During the 2012-2013 school year, there were 375 elementary public school districts, 387

unit school districts, and 100 high school districts in the state of Illinois, totaling 862 school

districts (ISBE, 2016c). The population for this proposed study included all 11th grade students

attending public high schools in unit school districts in Illinois during the 2012-2013 school year

who took the ACT during spring 2013 or during a subsequent make-up date. The Chicago Public

Schools were excluded due to its exceptional status within the state as the third largest public school district in the nation. An additional 11 of the 387 unit school districts were excluded from this study due to incomplete data in the ISBE database.

Through the 2013-2014 academic year, the ACT was administered annually to all eligible 11th grade students attending a public high school in the State of Illinois. The exam was designed to comply with NCLB accountability mandates. The English, science reasoning, reading, and mathematics portions of the ACT were administered as part of an official ACT administration and a composite score for each student was calculated. After grading by ACT and verification by ISBE, the results were reported to schools and districts. Students were also able to take the ACT on a national testing date, under conditions prescribed by ACT. After grading by ACT, these results were also reported to ISBE and schools and districts, and were included in the final data from ISBE.

All public school districts in the State of Illinois were required to submit their annual budgets to ISBE, and this financial data was available via archives maintained on the internet by ISBE. Thus, all data were publicly accessible through ISBE.

ACT and per-pupil expenditures for the 387 unit school districts were downloaded from the ISBE website and reviewed for any inaccuracies. The data were then uploaded into the Statistical Package for Social Science (SPSS) Graduate Pack. The SPSS data file was categorized into Region-County-District-Type Codes (RCDT), district name, district type code, enrollment, expenditures per-pupil, subgroup percentage of the school/district population, and ACT composite scores.

To address each research question, the dataset was examined for possible correlational relationships between expenditures and student achievement through the application of IBM

SPSS software. Linear regression data and statistical significance of relationships were calculated. Pearson Product Moment Correlation Coefficients (Pearson *r* values) were used to determine correlation. Pearson *r* values were then squared to identify the amount of variance explained within the model.

Summary

This chapter first provided a description of the research methods employed. This ex-post facto longitudinal study was designed to investigate the relationship between education spending and the achievement of 11th grade students attending unit school districts as measured by the Composite scores from the ACT portion of the PSAE. Overall student performance, as well the performance of Hispanic and African American subgroups, was investigated.

This chapter included research into the ACT as a measurement instrument and its validity as a tool to measure student achievement. The process for collecting the financial and student achievement data was also established with the financial data and the student performance data being collected from the ISBE archives. Finally, the procedure for analyzing the data was presented, with Pearson's *r* coefficient being utilized to identify correlations.

Chapter Four

Results

This quantitative study examined the relationships between district instructional spending and the performance of 11th grade students on the ACT, which was used as the PSAE in the State of Illinois. This chapter presents an analysis of data from 375 unit school districts during the 2012-2013 school year. The following research questions guided this study:

1. What is the relationship between district spending per-pupil for the 2012-2013 school year and student achievement on Composite portion of the ACT administered during the 11th grade PSAE administration?

2. What is the relationship between district spending per-pupil for the 2012-2013 school year and student achievement on Composite portion of the ACT administered during the 11th grade PSAE administration after adjusting for poverty level?

3. For each tercile as determined by total percentage of selected subgroups (including Black, Hispanic, and Native American), what is the relationship between district spending per-pupil for the 2012-2013 school year and student achievement on composite portion of the ACT administered during the 11th grade PSAE administration?

4. For each tercile as determined by total percentage of selected student subgroups (Black, Hispanic, and Native American), what is the relationship between district per-pupil spending for the 2012 2013 school year and student achievement on the composite portion of the ACT administered during the 11th grade PSAE administration, after adjusting for poverty level?

First, this chapter provides a description of the quantitative data collected for this study and the relevant descriptive statistics. Next, the research questions are analyzed using graphical and inferential statistics. Finally, analysis and commentary on significant findings are presented as they pertain to each research question.

Descriptive Statistics

Descriptive statistics describe the features and tendency of collected data. These features provide additional information about the data, including the minimum and maximum values, the mean, and the standard deviation. Table 2 presents the descriptive statistics for the variables of

interest in this study of the 2012-2013 school year. In 2016, the State of Illinois had 860 public

school districts, consisting of 377 elementary (PK-8) districts, 97 high school (9-12) districts,

and 386 unit (PK-12) districts.

Table 2

Descriptive Statistics of Unit School Districts, 2012-2013

2012-2013	N	Minimum	Maximum	Mean	Standard Deviation
ACT composite score	375	14.80	25.10	19.95	1.64
Instructional expenditures per pupil	375	$3,476	$10,338	$5,763	$1,024.00
Low Income %	375	1.10	96.50	26.46	16.17
Black %	375	0.00	99.30	4.77	13.25
Hispanic %	375	0.00	85.7	6.06	11.70
Native American %	375	0.00	3.80	0.21	.32

The average ACT composite score for all unit districts in the 2012-2013 data set was

19.95, which is below the public school state average of 20.4. The minimum value was 14.8 and

the maximum value was 25.1. The fact that the mean score for students in unit school districts

was below the state average demonstrates that on average, students in high school districts score

slightly higher on the ACT than students attending high schools in unit school districts. Average

instructional expenditure per pupil was $7,094 for all public school students in the state of

Illinois, almost $1,500 dollars higher than the average for unit school districts. The percentage of

low-income students in the State of Illinois was 51.5%, substantially higher than the rate for unit

school districts of 26.46%. The percentages of Black, Hispanic, and Native American students

enrolled in public schools in the State of Illinois were 17.6%, 24.1%, and .03%, respectively,

which were substantially higher than the average subgroup enrollments in unit school districts

(4.77% Black, 6.06% Hispanic, .021% Native American).

In the 2012-2013 school year, the lowest amount of funds spent on instructional

expenditures in unit school district was $3,476, while the highest amount spent in a unit district

was nearly three times greater at $10,338. Although the range is wide, the mean amount of $5,763 was below the midrange dollar amount, meaning most school districts tended to be in the lower end of the spending spectrum.

When reviewing the data, it became evident that an exceptional number of collar county school districts were clustered at the higher end of the list of ACT composite scores. "Collar counties" is a term commonly used in Illinois to describe the five contiguous counties (DuPage, Kane, Lake, McHenry, and Will) surrounding Cook County, the county that contains the City of Chicago. Collar counties are primarily suburban in nature as opposed to being urban or rural. The collar counties contain a combined total of 86 unit and high school districts; 34 are unit school districts and 52 are high school districts. Table 3 illustrates the locations of the high school and unit school districts as designated by the State of Illinois during the 2012-2013 school year.

Table 3

Unit and High School District Locations in Illinois During the 2012-2013 School Year

District	Collar county	Non-metro Chicagoland
Unit School	34	341
High School	52	48

Only 34 of the 375 unit school districts in the sample are located within collar counties, yet eight of the 10 unit districts with the highest ACT composite scores in the state of Illinois are located within the collar counties. Twenty of the collar county districts scored in the top half of the unit districts, while only 14 collar county school districts fell in the bottom half of state ACT composite performance. Only five of the 75 lowest scoring unit school districts were located in the collar counties. Meanwhile, when referencing IEPP expenditures, 10 of the top 26 and 21 of the top 100-spending unit school districts were located within collar counties. These facts would

lead one to believe that expenditures do not lead to higher student scores, as the top-scoring unit districts do not necessarily align with the highest spending unit districts.

The percent of low-income students in each district in the sample ranged from 1.1% to 96.5% across the state. The mean percent of low-income students in districts was 26.46%; the maximum percentage was 96.50%, while the minimum value was 1.10%. This information illustrates, along with a standard deviation of 16.17, that the majority of school districts have a percentage of low-income students between 10% and 42%.

In addition, 42 districts reported no Black students, 18 reported no Hispanic students, and 150 reported no Native American student enrollments. At the other highest levels, districts reported 99.3%, 87.5%, and 3.8% Black, Hispanic, and Native American enrollments respectively. The mean values for each of these subgroups were 4.77% (Black), 6.06% (Hispanic), and .21% (Native American). With standard deviations of 13.25, 11.7, and .32 respectively, the data demonstrates that the majority of unit school districts in the state have Black populations in the range of 0-18%, and Hispanic populations between 0-17%. Schools with subgroup enrollment percentages higher than these are less frequent in the State of Illinois. The percentage of Native American students enrolled across the state is universally low, with the maximum value being 3.8% of district enrollments. However, the mean of .21% and the standard deviation of .32 shows that most schools have percentages between 0% and .5%, with only a few unit school districts having populations higher than .5%.

For Questions 3 and 4, districts were categorized into groups based on their enrollments of Black, Hispanic, and Native American students. The fact that the percentages of Black students were clustered primarily in the single digits and teens, percentages of Hispanic students were clustered primarily in the single digits and teens, and percentages of Native Americans

were clustered primarily in the low single digits required a unique categorization of school

districts when addressing these research questions. Each district was categorized as having 0% to

10%, between 10% and 20%, and over 20% of their population as a combination of Black,

Hispanic, and Native American students. Initial attempts to use deciles (10 groups) or quintiles

(5 groups) led to groupings with n values near zero in some cases and produced statistically

insignificant data at times. In order to maintain statistically significant data sets, terciles using the

percentages listed above were chosen. These issues will be discussed further in the analysis

provided below.

Research Question 1: What Is the Relationship Between District Spending per-Pupil for the 2012-2013 School Year and Student Achievement on Composite Portion of the ACT Administered During the 11th Grade PSAE Administration?

A Pearson correlation analysis was conducted, applying a .05 significance level, to

determine if a relationship existed between district per-pupil spending and ACT composite

scores during the 2012-13 school year for the 375 Illinois unit districts. An r value of .022 was

calculated.

Overall Correlation Between IEPP and ACT Composite Scores

N	375
r	0.022
r^2	0.00048
p	.336

The r^2 value was .00048, which explains .048% of the variance in the data. This finding indicates

the relationship between the IEPP and the ACT composite accounts for less than 1% of the

variance in the data. Most importantly, the significance was calculated to be .336, well above the

.05 value being used to demonstrate statistical significance. Being substantially higher than .05,

the relationship between IEPP and the ACT composite scores for 11th grade students attending

high schools in unit school districts, therefore, was not statistically significant.

Research Question 2: What Is the Relationship Between District Spending Per-Pupil for the 2012-2013 School Year and Student Achievement on Composite Portion of the ACT Administered During the 11th grade PSAE Administration After Adjusting for Poverty Level?

This question explored whether a relationship existed between per-pupil spending and ACT composite scores in unit districts, after adjusting for poverty level. The assumption was that since spending per pupil is likely to be dependent on the socioeconomic status of the district, districts with higher levels of low-income students would be less able to spend as much on its students' instruction. Any relationship between spending per pupil and ACT composite scores might be attributed to the income level of the district. Therefore, once low-income status is considered by entering it into the regression equation, any relationship between spending per pupil and ACT scores is simply due to the underlying issue of the district's low-income level. Since the analysis for the first research question already showed that there was no statistically significant relationship between per-pupil instructional spending and ACT scores, it was not expected to find a statistically significant relationship between per-pupil instructional spending and ACT scores once adjusting for free/reduced-price lunch level.

Product Moment Coefficient tests were used to measure the strength of the linear association between two variables. When multiple variables were included, as the ACT score, percentage of Black, Hispanic, and Native American students, and poverty level were in Questions 2 and 4, a multiple regression analysis was used.

Although this question did not explicitly seek to examine the relationship between other independent variables and student achievement, other correlations, including the calculation of the r^2 value and the calculation of the percent of variance, were run to help frame the strength and significance of the correlation between percentage of low-income students within a unit school district and student achievement. This data was then utilized in the analysis of the

research questions. Table 4 outlines the relationships between the percentage of low-income students in unit school districts, ACT composite scores for unit school districts in the 2012-2013 school year, and IEPP.

Table 4

Correlations Between the Percentage of Low-Income Students in Unit School Districts and Other Variables

Variable	N	r	r^2	Percent of variance explained
ACT composite scores	375	-0.750	0.5625	56.25
IEPP	375	0.004	0.000016	.0016

When evaluating the relationship between the percentage of low-income students and the ACT composite scores of students in unit school districts during the 2012-2013 school year, the Pearson coefficient (r value) was found to be -.75 and the r^2 value calculated at .5625. A strong relationship was found between the percentage of low-income students and the ACT composite score. The negative value demonstrates an inverse relationship between the two variables, with 56.25% of the variance explained by the percentage of low-income students in the district. It is important to underscore that although the correlation between the percentage of low-income students and the ACT composite score is strong, it is not necessarily causal.

When evaluating the relationship between the percentage of low-income students and the IEPP during the 2012-2013 school year, the r value was found to be .004 and the r^2 value was .000016. This result demonstrated a statistically non-significant relationship, with the r^2 value explaining only .0016% of the variance. This finding is seemingly counterintuitive, in that that research shows that school districts with fewer financial resources tend to spend less per pupil on instruction (Yeung, 2008). However, the relationship demonstrated here does not align with that, and instead shows no statistically significant relationship between the percentage of low-income

students in unit school districts and IEPP. It is possible that the lack of a relationship between these two variables has created an environment among unit school districts in the State of Illinois in which the effect of financial inputs is diminished, true equity in funding has been achieved for unit districts within the state, or other variables (including cost of living or other societal influences) are influencing the situation. The lack of a statistically significant relationship between the percentage of low-income students in unit school districts and IPEP suggests a need for further research.

The SPSS software utilized to calculate the relationship between variables in research question 2 utilized a stepwise method to calculate the Pearson Product Moment Correlation Coefficients (Pearson r values) and is defaulted to include variables in the calculations if they add a statistically significant amount of explanation to the dependent variable. When programmed with the IEPP and percentage of low-income students as independent variables, and the ACT composite score as the dependent variable, the software rejected the use of the IEPP due to its failure to add a statistically significant amount of explanation in relation to the percentage of low-income students. The percentage of low-income students again explained 56.25% of the variance in ACT scores ($p < .0005$). Once it had been entered into the equation, IEPP was reduced to a non-significant level, with a p value of .471. With this information in mind, it is appropriate to conclude that there was no statistically significant relationship between the IEPP and the ACT composite scores, even after adjusting for poverty.

Research Question 3: For Each Tercile as Determined by Total Percentage of Selected Subgroups (Including Black, Hispanic, and Native American), What Is the Relationship Between District Spending Per-Pupil for the 2012-2013 School Year and Student Achievement on the Composite Portion of the ACT Administered During the 11th Grade PSAE Administration?

This question explored the relationship between IEPP and the ACT composite score for Illinois unit districts. Districts were categorized into groups based on their percentages of Black, Hispanic, and Native American students. Terciles were selected for groupings in order to maintain statistically significant data sets. The data were divided into terciles, with Group 1 including school districts with total percentages of Black, Hispanic, and Native American students under 10%, Group 2 including school districts with percentages between 10% and 20%, and Group 3 including school districts with percentages of Black, Hispanic, and Native American racioethnicities over 20%. Table 5 shows the results of the Pearson Product Moment Correlation Coefficient test.

Table 5

Correlation Between IEPP and ACT Composite Scores for Schools in Different Racioethnicity Terciles

Group	N	r	r^2	p
1	284	-.029	0.0008	.316
2	36	0.445	0.1980	.003*
3	55	0.099	0.0098	.236

*$p < .05$.

The Pearson Product Moment Correlation Coefficient test was utilized for Group 1. Group 1 had an *r* value of -.029, which demonstrates an inverse relationship between the percentage of Black, Hispanic, and Native American students and ACT composite scores. This relationship had an r^2 value of .0008, explaining only .08% of the variance in data. In addition, the statistical significance was calculated at $p = .316$, higher than the .05 threshold for statistical

significance. For Group 1, there was no statistically significant relationship between IEPP and ACT composite scores for Black, Hispanic, and Native American students

The Pearson Product Moment Correlation Coefficient test was utilized for Group 2. Group 2 had an r value of .445, and an r^2 value of .1980. The IEPP explained 19.80% of the variance in ACT composite scores for schools with a combined enrollment of Black, Hispanic, and Native American students between 10% and 20%. This variance was significantly higher than the .08% of the variance explained by IEPP in Group 1. The significance for Group 2 is calculated at $p = .003$, well below the .05 threshold for significance. For Group 2, there was a statistically significant relationship between IEPP and ACT composite scores.

The Pearson Product Moment Correlation Coefficient test was also utilized for Group 3 Group 3 had an r value of .099 and an r^2 value of .0098, explaining .98% of the variance in data. In addition, the significance was calculated at $p = .236$, higher than the .05 threshold for statistical significance. For Group 3, as with Group 1, there was no statistically significant relationship between IEPP and ACT composite scores for Black, Hispanic, and Native American students.

Groups 1 and 3 (0% to 10% and over 20%) showed no statistically significant relationship between IEPP and student achievement. Group 2 (populations between 10% and 20%) showed a statistically significant relationship with a p value of .003, well below the .05 threshold for significance. This finding proved significant in identifying a relationship between student performance and IEPP for a subgroup of students in unit school districts in the State of Illinois.

Research Question 4: For Each Tercile as Determined by Total Percentage of Selected Student Subgroups (Black, Hispanic, and Native American), What Is the Relationship Between District Per-Pupil Spending for the 2012 2013 School Year and Student Achievement on the Composite Portion of the ACT Administered During the 11th Grade PSAE Administration, After Adjusting for Poverty Level?

This question explored the relationship between IEPP and ACT composite scores after adjusting for poverty level. Again, districts were categorized into groups based on their total population of Black, Hispanic, and Native American students with Group 1 including school districts with percentages of Black, Hispanic, and Native American students under 10%, Group 2 including school districts with percentages between 10% and 20%, and Group 3 including school districts with percentages of Black, Hispanic, and Native American students over 20%. Due to the inclusion of the ACT composite score, percentage of Black, Hispanic, and Native American students, and poverty level in the analysis, a multiple regression analysis was again used.

As expected, correlations for groups of schools divided into terciles showed that low-income levels explained highly statistically significant levels of ACT composite score levels ($p < .05$). The data are shown in Table 6.

Table 6

Correlation Between ACT Composite Scores and the Percentage of Low-Income Students by District

Group	N	r	r^2	Significance
1	284	0.661	0.437	.123
2	36	0.762	0.581	.008*
3	55	0.890	0.792	.377

*$p < .05$.

As with Research Question 2, a multiple regression was utilized to identify any possible correlations in Research Question 4. However, when addressing Research Question 4, it is important to underscore that Research Question 3 analyses showed no statistically significant relationship between IEPP and ACT composite scores for Group 1 or Group 3. Statistical

significance was demonstrated only for Group 2. Thus, it was not unexpected when the SPSS software rejected the use of IEPP during the stepwise calculations for Group 1 and 3 due to its failure to add a statistically significant amount of explanation in the equations. Therefore, I found no statistically significant relationship between IEPP and the ACT composite scores for Group 1 and Group 3, even after adjusting for poverty. However, Group 2 did show a statistically significant relationship between IEPP and student performance on the ACT composite. Table 7 shows the relationship for Group 2 between IEPP and ACT composite scores when adjusted for poverty level.

Table 7

Correlation Between IEPP and ACT Composite Scores for Group 2 Racioethnicities After Adjusting for Poverty Level

Subgroup	r	r^2	Percent of variance explained
District low income percentage and IEPP	0.0814	0.663	66.3
District low income percentage	0.762	0.581	58.1

Group 2 had an r value of .814, and an r^2 value of .663 from the combined explanatory power of low income levels and instructional expenditures per pupil. The poverty level and the IEPP spending accounted for 66.3%, nearly two thirds of the variance in the data. The significance of adding the instructional expenditures variable was $p = .008$, well below the .05 benchmark for statistical significance.

A significant outcome of this set of calculations was the finding that in Group 1, 43.7% of the variance in the data was explained by poverty level (as measured by the percentage of low-income students in the district). For Group 3, nearly 79.2% of the variance was explained by poverty level, a dramatically significant amount of variance.

For Group 2, the only group for which IEPP showed a statistically significant effect, poverty level explained 58.1% of the variance. Reflecting on the overall variance of 66.3% in Table 5, one can calculate that poverty level contributed to 58.1% of the variance in the data and the IEPP contributed to 8.2% of the variance.

Summary

Chapter Four provided the results of the analysis of each research question and a presentation of the data. First, this chapter provided a description of the quantitative data collected for this study and the relevant descriptive statistics. Next, the primary research questions were analyzed using graphical and inferential statistics, and analysis and commentary on significant findings were presented.

The Pearson product analysis was conducted for each relationship, and then squared to find the variance in each relationship. The statistical significance (*p*-value) was also calculated at the .05 level when appropriate.

No significant relationship was identified between the IEPP and the ACT composite scores for 11th grade students attending unit school districts during the 2012-2013 school year. In addition, no relationship was found between the two variables after adjusting for poverty level.

When calculating the relationship between the IEPP and Composite ACT scores for 11th grade Black, Hispanic, and Native American subgroups in unit school districts during the 2012-2013 school year, no significant relationship was found for schools with less than 10% or over 20% Black, Hispanic, and Native American populations. However, a statistically significant relationship was found between the IEPP and ACT composite scores for 11th graders in unit school districts with 10%-20% Black, Hispanic, and Native American subgroup populations during the 2012-2013 school year.

When calculating the relationship between IEPP and ACT composite scores for 11th grade Black, Hispanic, and Native American student subgroups in unit school districts during the 2012-2013 school year and adjusting for poverty level, no significant relationship was found for schools with a combined total of less than 10% or over 20% Black, Hispanic, and Native American populations. A statistically significant relationship was found between the IEPP and ACT composite scores for 11th graders in unit school districts with 10%- 20% Black, Hispanic, and Native American subgroups during the 2012-2013 school year, with the IEPP explaining 8.2% of the variance in the data. In all three groups, the poverty level (represented by the percentage of low-income students in the district) had a significantly greater influence on the variance than did the IEPP. Chapter Five further analyzes the data, discusses implications of the findings, and offers recommendations for future research.

Chapter Five

Findings, Discussion, Implications, and Recommendations

A significant gap exists in education funding in Illinois between the wealthiest public

school districts and "property poor" districts (Baker, Sciarra, & Farrie, 2017; ISBE, 2016c). In

addition, a significant achievement gap exists between subgroups of students deemed "at-risk"

and the rest of the student body nationally, and specifically within Illinois (Beck & Schoffstall,

2005; ISBE, 2012; ISBE, 2018e). Researchers have consistently documented a significant

relationship between school instructional expenditures and student achievement (DiGangi, 2017;

Grace, 2002; Kenyon, 2001; Krause, 2017; Lockwood & McClean, 1993; Stegmaier-Nappi,

1997; Thompson, 2003). Research also has demonstrated that a gap exists with regard to possible

relationships between school funding and the achievement of students in unit school districts in

the State of Illinois. The purpose of this quantitative study was to determine whether a

relationship existed between Individual Expenditures per Pupil (IEPP) and student achievement

for 375 unit school districts in the state of Illinois as indicated on the Illinois School Report Card

in the 2012-2013 school year. Achievement was measured by the ACT composite score.

Education Production Function analysis was used as a framework for this study to relate

spending inputs to student achievement. Although pursuit of education production functions does

not represent a single answer for all students and school systems, it is a pursuit of functions that

may relate to varied students and student characteristics (Monk, 1989). The following research

questions guided this study:

1. What is the relationship between district spending per-pupil for the 2012-2013 school year and student achievement on Composite portion of the ACT administered during the 11th grade PSAE administration?

2. What is the relationship between district spending per-pupil for the 2012-2013 school year and student achievement on Composite portion of the ACT administered during the 11th grade PSAE administration after adjusting for poverty level?

3. For each tercile as determined by total percentage of selected subgroups (including Black, Hispanic, and Native American), what is the relationship between district spending per-pupil for the 2012-2013 school year and student achievement on Composite portion of the ACT administered during the 11th grade PSAE administration?

4. For each tercile as determined by total percentage of selected student subgroups (Black, Hispanic, and Native American), what is the relationship between district per-pupil spending for the 2012 2013 school year and student achievement on the composite portion of the ACT administered during the 11th grade PSAE administration, after adjusting for poverty level?

This study utilized financial and student achievement data to determine if a relationship existed between per-pupil instructional spending and the performance of 11th grade students on the 2012-2013 ACT examination that was administered as part of the Prairie State Achievement Exam. The dataset was examined for possible correlational relationships between expenditures and student achievement through the application of IBM SPSS software. Linear regression data and statistical significance of relationships were calculated. Pearson Product Moment Correlation Coefficients (Pearson r values) were used to determine correlation. Pearson r values were then squared to identify the amount of variance explained within the model.

This chapter summarizes findings from each research question, discusses the findings within the extant research on this topic, examines the implications of the findings, and offers recommendations for practice and future research.

Findings

A brief summary of the findings is described in this section for the four research questions. The findings identified no statistically significant relationship between IEPP and overall achievement of 11th grade students in unit school districts in the 2012-2013 school year but did identify a significant relationship in one of the subgroups, both before and after adjusting for poverty level. In addition, the findings identified a significant relationship between poverty and student achievement.

Research question 1: Relationship between district spending per-pupil and ACT composite scores. Krause (2017) and DiGangi (2017) identified statistically significant relationships between educational expenditure and student achievement in Illinois high school and elementary districts, and I speculated that the same significance existed within unit districts within the state. However, an analysis of the data showed no statistically significant relationship between IEPP and student achievement for 11th grade students in Illinois unit school districts during the 2012-2013 school year. An analysis using Pearson Product Moment Correlation Coefficients yielded a significance of .336, significantly higher than the .05 threshold being used to show statistical significance.

Research question 2: Relationship between district spending per-pupil and ACT composite scores after adjusting for poverty level. This question attempted to identify any statistically significant relationship between IEPP and 11th grade student achievement on the ACT composite after adjusting for poverty level. The assumption was that spending per-pupil is often dependent on the socioeconomic status of the district, and that districts with higher levels of low-income students would have fewer resources to spend on education. Including free and reduced-price lunch levels in the analysis sought to eliminate poverty from the equation, providing a more complete picture of any relationship between IEPP and student achievement. After incorporating the percentage of students qualifying for the federal free or reduced lunch program into the calculations, no statistically significant relationship was identified between IEPP and student achievement for 11th grade students in Illinois unit school districts during the 2012-2013 school year.

Research question 3: Relationship between district spending per-pupil and ACT composite scores for terciles by total percentage of Black, Hispanic, and Native American

students. In order to identify any relationship between IEPP and the achievement of 11th grade subgroup populations, unit school districts were categorized into one of three categories based on their total percentage of Black, Hispanic, and Native American students. The categories included districts where Black, Hispanic, and Native American students comprised 0% to 10% of population, 10% to 20% of the population, or over 20% of the population. Groups 1 and 3 (0% to 10% and over 20%) showed no statistically significant relationship between IEPP and student achievement. For Group 2 (populations between 10% and 20%) the *p* value of .003, well below the .05 threshold for significance, showed a statistically significant relationship. This finding proved significant in identifying a relationship between student performance and IEPP for a subgroup of students in unit school districts in the State of Illinois.

  Research question 4: Relationship between district spending per-pupil and ACT composite scores for terciles by total percentage of Black, Hispanic, and Native American students, after adjusting for poverty level. As with research question 2, the intent of this question was to isolate the influence of poverty as a variable in the analysis. Districts were again divided into terciles based on their total population of Black, Hispanic, and Native American students, using the same 0% to 10%, 10% to 20%, and over 20% groupings. As with research question 3, groups 1 and 3 again showed no statistically significant relationships between IEPP and student achievement. However, group 2 (10% to 20%) produced a *p* value of .008, well below the .05 threshold for significance. When calculating the variance for group 2, poverty level contributed to 58.1% of the variance in the data, while the IEPP explained 8.2% of the variance. Although the variance explained by the IEPP was one seventh the size of the variance explained by the poverty level, its impact remained statistically significant.

Discussion

  This section contains a discussion of the findings of this study. In addition, the findings are explored through the lens of Education Production Function Analysis (Monk, 1989).

  This study sought to identify relationships between funding inputs, specifically IEPP, and the performance of 11th grade students in Illinois unit school districts during the 2012-2013 school year. Multiple researchers have attempted to use data from standardized tests such as the ACT, state-created performance assessments, and the SAT to assess the effects of per-pupil funding on student performance (Frank, 1990; Grace, 2002; Jones & Gilman, 1993; Kenyon, 2001; Lockwood & McClean, 1993; Rich, 1999; Sharp 1993; Snyder 1995; Stegmaier-Nappi, 1997; Thompson, 2003). Krause (2017) and DiGangi (2017) investigated the relationship for high school and elementary school districts in Illinois; however, a gap existed regarding the performance of students in unit school districts in the State of Illinois.

  First, it was noteworthy that this study did not find a relationship between the IEPP of unit school districts and the composite scores of 11th grade unit school district students on the ACT. Based on the literature reviewed for this study, it was expected that a relationship would exist between the IEPP and student achievement in unit school districts in the State of Illinois. This expectation was based on findings from research that has been conducted in other states (Grace, 2002; Kenyon, 2001; Lockwood & McClean, 1993; Stegmaier-Nappi, 1997; Thompson, 2003), as well as recent findings of school finance research conducted in the state of Illinois. Krause (2017) and DiGangi (2017) identified statistically significant relationships between educational expenditures and student achievement for students in high school and elementary school districts in the State of Illinois. The expectation that a relationship existed was also based on the legal settlement between the Chicago Urban League and the State of Illinois, where

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plaintiffs maintained that inadequate funding was a civil rights violation in that it negatively impacted student achievement (*Chicago Urban League and Quad County Urban League v. State of Illinois and Illinois State Board of Education*, 2008). The results of this study showed that no relationship existed between the IEPP and 11th grade unit school district student achievement on the ACT for the 2012-2013 school year, contradicting, at least in part, these previous findings. No overall relationship was found before and after adjusting for poverty level. However, a positive correlation was found when analyzing the relationship between IEPP and the performance of Black, Hispanic, and Native American student in unit school districts. When doing so, a relationship was found to exist between IEPP and the performance of Black, Hispanic, and Native American students in unit school districts where they made up between 10% and 20% of the population. This relationship was significant, both before and after adjusting for poverty level. This finding demonstrates that for some student populations in unit school districts, IEPP is significantly correlated to student performance.

The absence of a significant overall relationship between IEPP and the performance of 11th grade students in high school districts takes on a unique flavor, specifically in light of two recent studies by DiGangi (2017) and Krause (2017) that reached conclusions that contradicted my findings. DiGangi evaluated data between 2003-2004 and 2013-2014 school years, finding that increases in funding led to increases in elementary school student achievement in the State of Illinois. Krause used data from high school districts in Illinois and found positive correlations between Student Support Expenditures, Instructional Expenditures per-pupil, Equalized Assessed Valuation, and average ACT composite scores from 2002-03 and 2013-2014. This study found no overall correlations between IEPP and ACT composite scores for 11th grade students in unit school district, but did find correlations in districts where Black, Hispanic, and Native American

students comprised 10-20% of the population. In addition, this study found increasingly significant correlations between poverty level and the Composite Act Scores of Black, Hispanic, and Native American students in unit school districts. This data, along with these findings from DiGangi and Krause, gives a more complete understanding of funding and student achievement across Illinois elementary, high school, and unit school districts, and provides a more comprehensive picture of the relationship between school funding and student achievement in public school districts across the state of Illinois. In all three district types, funding correlated to student achievement, supporting the conclusion that the state's funding structure and fundamental reliance on local property taxes fails to minimize the variance in student backgrounds, especially when it comes to poverty and the inability of property poor districts to fund education.

The fact that positive relationships exist for all students in elementary and high school districts, but do not exist for all students in unit school districts, raises additional questions. One possible reason for the difference between the statistically significant findings by Krause (2017) and DiGangi (2017) is that both researchers used financial data that was specifically focused on the targeted student population. Funding spent in high school districts is applied specifically to high school students, and dollars spent in elementary school districts are allocated specifically to elementary and middle school students. In contrast, funding in unit school districts is allocated across the P-12 spectrum, including elementary, middle-level, and high school students. As mentioned in Chapter Two, high school students are traditionally more expensive to educate than are elementary students, which likely would have skewed the IEPP numbers in unit school districts higher or lower depending on the number of elementary and high school students in each district. The reliance on an average IEPP in each unit district and an inability to identify the

exact dollar amount spent on high school students in each unit school district in this study may have contributed to the finding of a lack of statistical significance between IEPP and student performance on the ACT.

Questions also arise about Illinois school district funding levels and funding equity across all district types. Data from the State of Illinois shows that during the 2012-2013 school year, high school districts and elementary school districts had a higher operating expense per pupil than the average unit school district (ISBE, 2018c). High school districts averaged $15,621 per student, elementary districts averaged $11,594, and unit school districts averaged $11,532 per student during the 2012-2013 school year. This data, in combination with the findings from these three studies, present an opportunity for further investigation and analysis into whether funding equity exists across elementary, unit, and high school districts, whether equity exists within each of these district types for student subgroups, and into other possible factors in student achievement in elementary, high school, and unit school districts.

The influence of poverty was an important finding in this study, because poverty explained a significant portion of the variance in both of the research questions where it was included. In Research Question 2 and Research Question 4, poverty was shown to have a significant influence. Reflecting on Group 2 where the IEPP and the poverty level explained 66.3% of the variance, poverty percentage alone explained 58.1% of that variance. The remaining 8.2% of the variance was explained by IEPP for students in Group 2. An evaluation of the r^2 values also showed that as poverty level rises, poverty explains more of the variance in student ACT scores. In order to further clarify the relationship between the IEPP, ACT composite scores for Black, Hispanic, and Native American students and poverty level as a portion of the data analysis in Research Question 4, an additional correlation was run to calculate

the relationship between the IEPP and the percentage of low-income students in Groups 1, 2, and 3. As with Research Question 2, the r^2 values demonstrated that poverty explains remarkable amounts of the variance in student data. Group 1, Group 2, and Group 3 produced r^2 values of .437, .581, and .792 representing 43.7%, 58.1%, and 79.2% of the variance in data. These findings demonstrate that poverty level has a remarkably significant correlation to student performance on the ACT and explains a substantial portion of the variance in ACT scores. In addition, the amount of variance explained by the poverty level increases as the percentage of students in poverty increases within districts. For Black, Hispanic, and Native American students in unit school districts, the higher the poverty level, the higher correlation to student ACT scores. These findings explain why in Research Question 2 and in portions of Research Question 4, the overwhelming influence of poverty level resulted in the rejection of IEPP as a variable due to its relative insignificance. Poverty simply overwhelms any effects that IEPP may be having on many students. Even in Research Question 4, where the IEPP was found to have a significant relationship to student achievement and was not rejected by the analysis, the results demonstrated that poverty level still explained significantly more of the variance than the IEPP. In Group 2, the IEPP explained 8.2% of the variance, while poverty contributed to 58.1% of the variance in the data.

The importance of the existing relationships between IEPP and student achievement for subgroup populations in this study is noteworthy. In the literature review, researchers reached mixed conclusions when evaluating relationships between educational inputs and student achievement (Coleman, 1966; Hanushek, 1986; Hedges, Greenwald & Laine, 1994; Knoeppel, Verstegen, & Rinehart, 2007). The Coleman Report (Coleman, 1966) focused on national data that was available through nation-wide surveys, allowing them to study inputs and student

learning outcomes. The findings were that few inputs outside socioeconomic background and racial makeup explained variations in student achievement. The findings in this study that poverty has a significant correlation to student achievement confirms that little has changed since 1966. In addition, this study demonstrates that for Black, Hispanic, and Native American students, the correlation between poverty level and student achievement increases as poverty level increases. The issues of poverty and the achievement gap that The Coleman Report identified in 1966 were reiterated over 50 years later in the findings of this study.

The availability of data has exploded since the Coleman Report in 1966, with NCLB and universal state assessment providing statewide data sets of student test data, attendance rates, graduation rates, and student demographic data for entire grade levels of students. National exams such as the National Assessment of Education Progress (NAEP), the Trends in International Mathematics and Science Study (TIMMS), and Progress in International Reading Literacy Study (PIRLS) have done the same on national and international scales. Significant debate has taken place as to whether correlations exist between expenditures and student achievement at all of these levels. Hanushek's studies and analyses during the 1980s and 1990s proved influential to U.S. public policy, as his findings during this time largely denied the existence of any positive correlations between expenditures and student achievement. Hedges, Greenwald, and Laine reevaluated his data, and maintained that positive correlations did exist. Studies such as Knoeppel, Verstegen, and Rinehart (2007) found mixed results in their evaluation of the educational system in Virginia. These conflicting studies and mixed conclusions have led to significant public confusion and point to the need for additional research on a national scale, as well as on state and local school systems.

Often, these contradictory findings add to public uncertainty, but in reality, these results can help identify effective practices or "high leverage" areas in which inputs (be they financial or otherwise) can make a significant difference in student achievement. The findings in this study can do exactly that, by identifying a specific population of student for whom increased IEPP funding makes a statistically significant difference in their learning and achievement. These findings are particularly significant in light of the recent change by the State of Illinois to an Evidence Based Funding model for public school district funding (ISBE, 2017b). This model is designed to target additional funding allocations for property-poor school districts, in an effort to bring equity to the Illinois funding model (Garcia, 2017). Knowing that a relationship exists between IEPP and the performance of Black, Hispanic, and Native American students in unit school districts where the population is 10-20%, Illinois policymakers and local school district leaders can target funds in the most effective manner possible to support the learning and performance of this subgroup of students. By moving to the new model, the State of Illinois appears to have taken a positive step in improving funding equity and in distributing funds in a manner that can have the most significant impact on student learning. Further research akin to this study can identify other significant relationships between funding and student achievement and can help target areas in which funds can most effectively influence student learning and performance.

Education production function analysis was used in this study to specifically relate the input of IEPP to the output of 11th grade unit school district student performance on the ACT. Although it is possible to use forms of production function analysis to provide a standard against which performance can be measured, that approach was not applied in this study. Education production analysis was utilized in this study to research correlations between the two variables,

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before and after accounting for poverty level. One of the fundamental premises of education production functions is that they do not represent a single answer for all students and school systems; rather, they are a pursuit of functions that may relate to varied students and student characteristics. This framework proved useful as a lens through which to conduct this investigation in that it provided for the determination of the specific input, specific output, statistical methods for relating them, and the discovery of functions that may exist between the two.

Implications

Adequate and equitable school funding is a significant issue for the citizenry, and Illinois has been identified as having significant disparities and inequities in its funding structure (Baker et al., 2018). This study contained findings that may be noteworthy or useful to citizens and to policymakers who are concerned about the adequacy of public school funding and student academic performance in the State of Illinois.

First, as Illinois continues to maintain inequitable funding structures for the state's schools and districts, school leaders are often forced to reduce or eliminate programs or substantially reduce expenditures for textbooks, technology, and other learning supplements. These cuts are most evident in low-income or property poor districts, and arguably their effects are felt to a much greater extent by students who attend these districts, particularly those from historically underrepresented subgroups. The identification of correlations between IEPP and the achievement of 11th grade Black, Hispanic, and Native American students in unit school districts from this study shows that instructional expenditures have a direct relationship to the achievement of some student subgroups, and when these expenditures are reduced, student achievement also can soon decline. In the current climate, the finding structure in place

contributes to the achievement gap that exists between White students and Black, Hispanic, and Native American students in poverty. Students of color likely will continue to lag behind their peers academically if this funding approach does not change. Citizens must hold representatives in the Illinois legislature and governor's office accountable for the implementation of a more equitable funding system. Illinois policymakers must continue efforts to create an equitable funding structure that meets the needs of all public school students across the state and must evaluate the effects of the new evidence-based funding formula over time.

Second, findings from this study support the importance of targeting funding for specific areas or programs as a powerful approach, as schools and districts seek to utilize their funds in the most efficient manner possible. My findings revealed that Black, Hispanic, and Native American students, who historically have evidence of performing at a lower level than their White counterparts, can benefit from additional educational expenditures. As additional funds become available, school districts and local communities can use those funds in the most efficient manner to help close achievement gaps and improve learning for these traditionally underserved populations.

Finally, the findings in this study regarding the significant correlation between poverty level and student achievement is a stark reminder of the effect poverty can have on students and learning. The findings suggest that there is a stronger relationship between socioeconomic status and student achievement than between instructional expenditures and student achievement, and they reinforce the claim that school districts may have been evaluated more on the effects of poverty during recent years than on students' actual academic achievement (Sadker & Zittleman, 2011). Tackling poverty as a societal and education issue continues to be a significant challenge in Illinois, and is one that must continue to be at the forefront of the citizenry.

Recommendations for Policy and Practice

There are several policy implications that arise from this study. First, this study confirms that educational spending does have a positive effect on student performance in many unit school districts across the state. This finding is in line with previous research conducted in the state of Illinois that supports increased funding to improve achievement (DiGangi, 2017; Krause, 2017). However, unlike studies by DiGangi and Krause that found statistically significant relationships between IEPP and overall student performance in elementary and high school districts in Illinois, no such relationship exists within unit districts in the State of Illinois. An overall increase in spending is not shown to be a universal solution for student performance in unit districts across the state. Increases in IEPP are shown to be effective in specific, targeted areas for unit districts. This study uncovered one such situation, but others may certainly exist, requiring ongoing research. This research is especially timely and necessary with the state's recent adoption of the SAT as the required 11th grade accountability assessment as well as state legislators' shift away from the foundation funding model to an evidence-based funding system within the State of Illinois. This new funding system professes to target funds to districts that have at-risk student populations with the idea of improving student performance. With proper allocation, these funds can be distributed by the state to districts and schools with maximum efficiency and impact.

Second, this study showed that poverty has a remarkably significant effect on student performance in the unit school districts in the State of Illinois. It also showed that as the poverty level rises within a district, historically underrepresented student populations are at risk for progressively lower performance levels. Poverty is a social and cultural issue that is impacting the neediest students in the state, and one that must be addressed and removed in the interest of our most disadvantaged students.

The education funding system in Illinois currently relies on local property taxes as its primary source of funding. Property poor districts continue to maintain low levels of school funding due to a lack of financial resources and thus, maintain lower levels of student performance. If Illinois continues to rely on local property taxes as the primary method to fund schools, communities must find ways to improve the economies and tax bases for property poor districts. The creation of strong local economies and "property healthy" districts is a must. Policy, business, and civic leaders must find ways to create jobs that allow families to move out of poverty, create an employable job force that can meet the needs of 21st century businesses and industries, improve the local economy, and raise local property values. If this is not accomplished, and if Illinois continues its heavy reliance on local property taxes, students in property-poor districts will continue to be at risk for low academic performance levels.

Recommendations for policy. This section contains two recommendation for policy makers.

The first recommendation is for meaningful change to the education funding system in the State of Illinois away from a reliance on local property taxes as the primary source of education funding. The results of this analysis, coupled with research by DiGangi (2017) and Krause (2017), point to a disproportionate reliance on local property taxes in the State of Illinois to fund education. The results also identify a substantial inequity in funding levels between school districts. All three studies demonstrate statistically significant relationships between education spending and student achievement, and also demonstrate a need for an equitable funding system in the state. In 2017, the State of Illinois adopted a new, evidence-based funding system for education (ISBE, 2017b). This new funding model is a move away from the foundation funding model to a new system that professes to target additional funds to districts

that have higher proportions of historically underrepresented students. The goal is to improving

student performance. This model directly addresses the recommendation to move away from

local property taxes as the primary source of funding in that it addresses the discrepancy in

funding identified in this study. Evidence based funding addresses the inequities that currently

exist by elevating education funding for at-risk schools and districts. With targeted allocation,

state funds can be distributed to districts and schools with maximum efficiency and effect.

The second recommendation for Illinois policymakers is to find ways to access additional

funds for public PK-12 education within the state. The foundation level established by the

General Assembly was $6,119 per student for the 2017-2018 school year, over $3,000 less than

the amount recommended by the Education Funding Advisory Board (EFAB) in January 2017

(EFAB, 2017). According to the board's annual report, the cost to meet the recommendation by

EFAB would be over $4.6 billion—nearly doubling the current annual state allocation of $5.07

billion. The recommendation and calculations by EFAB demonstrate a significant discrepancy

between the total recommended education expenditure, and the actual expenditure by the State of

Illinois. If the goal of the new evidence-based funding formula is to increase spending for PK-12

education overall, and specifically for historically underrepresented students without siphoning

funds from other schools, Illinois legislators must find additional funds to close the spending

gap. However, the financial situation in the State of Illinois is particularly dire, with a reported

budget deficit of $14.6 billion in 2017 (Pierog, 2018). Understanding the poor financial status in

which the state of Illinois finds itself, locating additional revenue sources for education presents

a significant challenge for state policymakers.

Recommendations for practice. Two recommendation for practice are presented in this

section. The first recommendation for practice is that school districts must partner with business

and civic leaders to address job availability, workforce preparation, and ultimately poverty across the state. This study showed that poverty level dwarfed the influence of education spending in every group identified in Research Questions 3 and 4. State workforce groups and local municipalities must provide business-friendly environments that invite investment and create job opportunities. Businesses must provide jobs that allow employees to earn a reasonable living that can support a family. Schools and local leaders must work together to provide an educated workforce that is able to meet the needs of the 21st century job market. All parties must work together to provide the additional funds necessary for education, outreach, and training that are needed to address the systems that have led to employability gaps and the subsequent poverty that has resulted. In addition, systems exist throughout the state that have created winners and losers when it comes to economic development and job creation. State and local leaders must confront the systematic negligence of some communities and must actively break down barriers to economic investment and growth in Illinois' neediest communities. Only through systematic, ongoing communication, collaboration, and cooperation can poverty begin to be addressed across the state and property-poor school districts be supported so that they can adequately fund local schools.

In addition, it is recommended that Illinois seek to consolidate school districts across the state in order to bring about greater consistency and equity in education funding across the state. According to school funding experts, Illinois has failed when it comes to equity in education funding (Baker et al., 2015). Illinois has three types of public school districts, and the funding policies for each type vary greatly (ISBE, 2018d). In addition, Illinois had the sixth highest number of school districts in the nation, behind Texas, California, New York, Ohio, and Michigan, with 862 public school districts in the state in the 2016-2017 school year (U.S.

Department of Education, 2018). The large number of districts creates an environment where funding, policy, and practice vary greatly across the state. The Task Force on Local Government Consolidation and Unfunded Mandates (2015) presented a report to Governor Bruce Rauner in December 2015, recommending reductions to the number of government institutions in the State of Illinois. One proposal approved by the committee included a recommendation to provide ISBE with flexibility to incentivize school district consolidation. Following through with this consolidation plan could bring some consistency to policy, practice, and funding across the state in addition to decreasing administrative costs within school districts. Increased consistency in funding should decrease the significant discrepancies in funding that currently exist, and allow for more equitable funding across the state. Questions remain regarding whether overall school district costs would decrease or increase, as bringing equality to funding across the districts may increase overall costs as lower funded districts are finally brought up to funding levels of their neighbors. Consolidating school districts could result in reducing the need for additional funds and resources (Verstegen & Driscoll, 2008).

Recommendations for Further Research

Four recommendations for further research are presented in this section. The first recommendation for further study includes the need for significant data collection and analysis regarding education expenditures and student achievement in light of the recent changes to the Illinois testing and the school funding systems. Both changes altered variables in funding and student performance assessment, and extensive evaluation is necessary to evaluate the impact of these changes. The elimination of the foundation formula has professed to provide additional funds to the neediest districts, schools, and students in Illinois, but has continued a significant reliance on local property taxes as a primary method of funding schools. It is imperative that the

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new system be evaluated as to whether the new system addresses the funding discrepancies that exist across the state and whether any increases in funding translate to improved student performance.

The second recommendation is to conduct follow-up studies regarding correlations between education expenditures and student performance in elementary, unit, and high school districts in Illinois. This study focused solely on 11th grade students in unit school districts. Krause (2017) already examined 11th grade students in high school districts and DiGangi (2017) examined elementary students in elementary districts, and both found IEPP has a statistically significant impact on student performance in those districts. A study that researches the relationship between IEPP and the performance of all 11th grade and all elementary students would add to the existing body of research. This research would also help answer why high school and elementary districts have statistically significant relationships between IEPP and unit districts only showed this relationship for one student subgroup. Researching these relationships may also identify if the higher levels of spending that exist on the average for elementary and high school districts provide new dynamics when it comes to influencing student learning. Conceivably, these two types of districts may have reached levels of spending that have a greater impact on student performance while the average unit district has not yet reached this level and thus, is not showing the impact that the elementary and high school districts produce.

The studies by Krause (2017), DiGangi (2017), as well as this study utilized data from assessment and funding systems that no longer exist within the State of Illinois. Although they provide a snapshot of relationships at specific moments in time, additional research into relationships between funding and student performance under the new Illinois assessment

program and the evidence-based funding system will be vital in the coming years to truly evaluate the effect of the changes the State of Illinois has recently implemented.

The third recommendation is for research into regional similarities and differences in school district funding and student performance in the State of Illinois. As others continue to explore the relationship between education spending and student performance, there are several areas that warrant further examination. This study found that IEPP had a statistically significant relationship to student learning for students in Group 2 unit school districts where the population of Black, Hispanic, and Native American students comprised 10-20% of the student body. The fact that such a relationship exists for only this subgroup in unit school districts warrants additional investigation. In addition, this study showed an unusually high number of unit districts in collar counties outperformed their counterparts across the state. This finding was true in spite of there not being significantly higher expenditures in collar county districts. Also, this study did not make accommodations for differences in cost of living across the State of Illinois. Unit school districts are the most prevalent type of district across Illinois, and they stretch to every corner of the state. This study addressed unit districts as a collective group, yet regional differences in cost of living clearly exist. From rural, to suburban, to urban, the locations vary greatly and the cost of living does as well. Research including the cost of living would shed light on what is considered "adequate" funding and would add additional information about where dollars could make the most impact across the state. In addition, researching regional differences would clarify whether higher spending in collar counties is skewing data with regards to lower spending in rural, down state districts. Group 1 contained 284 schools, with fiv being from collar counties and 279 being located in non-metropolitan Chicagoland. Group 2 included 11 collar county school districts and 15 non-metro Chicagoland school districts from the remainder of the

state, which was by far the most equitable split between collar county and non-metro Chicagoland schools among the three groups. Group 3 included 18 collar county districts and 37 non-metropolitan Chicagoland districts. When sorted by IEPP, the collar county districts were distributed throughout the data set, but when sorted by ACT score, nine of the top 18 scoring districts were from collar counties. The prevalence of collar county school district students scoring higher on standardized tests raises questions about other variables that may influence student performance. More research into the region, student makeup, method in school district funds are allocated, and other variables would provide a better picture of what expenditures are providing the most significant effects on student performance across the state. It is possible that other subgroups are being positively impacted by differences in IEPP spending, and additional research into spending and other subgroups would also provide additional information for the evidence-based funding system that the State of Illinois is utilizing.

The final recommendation is for research into existing efforts to conquer poverty in communities across Illinois and the nation. Poverty was identified as having a significant, negative relationship to student performance. Poverty is a social issue, and further research exploring the effect of poverty through various lenses would be important future research. For example, researching efforts to connect civic leaders, businesses, and schools in the state would help shed light on promising practices that may be expanded to other communities. These types of research could have far reaching impacts on not only student performance, but on entire communities and even the State of Illinois itself.

Conclusion

NCLB and ESSA brought new accountability requirements to the State of Illinois, including requirements for financial data collection, student testing through state approved

exams, and the recording of student achievement on those state exams. These changes have allowed researchers access to large data sets and have allowed researchers to investigate relationships between financial inputs into the education system and student achievement outcomes. This study demonstrated that a significant inequity in school funding exists across the State of Illinois. This study also found that statistically significant relationships exist between IEPP and Composite ACT scores for 11th graders in unit school districts in the State of Illinois during the 2012-2013 school year. These findings align with the findings of Krause (2017) and DiGangi (2017) to not only substantiate the findings of significant inequities in funding across the state of Illinois but also to demonstrate that statistically significant relationships between education funding and student achievement in elementary, high school, and unit school districts exist across the State of Illinois. Ultimately, this research demonstrates that one of the unintended consequences of the State of Illinois not adequately funding school districts is that there has not been a level playing field when considering student achievement across the state. The failure of state leaders to adequately fund education had been a disservice to students in the State of Illinois. It is up to them to find a way forward where all students can receive equitable education through equitable funding of schools and districts.

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Appendix A

Illinois Unit School Districts Identified in Study

Table 8

Illinois Unit School Districts Identified in Study

District	ACT composite	District Black %	District Hispanic %	District Native American %	District Low income %	IEPP
A-C Central CUSD 262	21.8	2.7	1.6	0.0	44.2	$4,067
Alden Hebron SD 19	19.1	0.7	18.2	0.0	35.3	$6,159
Altamont CUSD 10	21.1	0.8	0.9	0.1	49.0	$5,022
Alton CUSD 11	18.4	30.1	2.5	0.1	61.9	$6,754
AlWood CUSD 225	20.3	0.2	1.4	0.0	36.5	$7,178
Amboy CUSD 272	19.9	0.4	5.1	0.1	35.8	$5,670
Annawan CUSD 226	19.9	0.5	1.2	0.0	30.5	$6,479
Arcola CUSD 306	18.8	0.3	36.4	0.0	45.6	$5,341
Argenta-Oreana CUSD 1	19.4	2.9	3.1	0.3	45.9	$4,364
Arthur CUSD 305	20.6	0.5	2.0	0.2	41.9	$5,891
Ashton-Franklin Center CUSD 275	20.8	2.1	4.5	0.4	35.0	$6,074
Astoria CUSD 1	19.7	0.0	0.3	0.0	56.6	$5,692
Athens CUSD 213	20.9	1.5	0.8	0.0	29.3	$4,312
Atwood Hammond CUSD 39	19.2	0.2	0.2	0.0	51.8	$4,823
Auburn CUSD 10	19.8	0.9	2.1	0.2	31.4	$5,295
Aurora East USD 131	17.1	8.2	85.7	0.6	74.7	$5,977
Aurora West USD 129	19.2	11.9	53.0	0.7	61.6	$6,916
Ball Chatham CUSD 5	22.5	5.5	3.7	0.1	21.5	$5,384
Barrington CUSD 220	25.0	1.5	16.7	0.0	21.0	$9,039
Batavia USD 101	23.1	3.9	9.5	0.2	13.6	$6,863
Beardstown CUSD 15	16.9	6.6	47.9	0.1	77.6	$5,300
Beecher City CUSD 20	19.3	0.0	1.2	0.3	47.6	$5,524
Beecher CUSD 200U	20.8	1.8	13.7	0.2	28.1	$5,320
Belvidere CUSD 100	19.5	3.1	34.8	0.5	43.0	$5,808
Bement CUSD 5	18.8	0.8	1.6	1.0	45.4	$5,597
Bethalto CUSD 8	19.6	1.8	2.4	0.2	53.8	$5,394
Bismarck Henning CUSD	19.5	0.8	1.7	0.0	31.4	$6,015
Bloomington SD 87	20.0	22.3	11.8	0.3	56.5	$6,152

(continued)

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Table 8 (continued)

District	ACT composite	District Black %	District Hispanic %	District Native American %	District Low income %	IEPP
Blue Ridge CUSD 18	19.5	1.0	1.8	0.6	43.6	$6,666
Bond County CUSD 2	21.0	2.7	2.1	0.2	45.1	$5,322
Brimfield CUSD 309	22.1	1.0	1.2	0.0	20.2	$5,103
Brown County CUSD 1	20.0	0.3	2.0	0.0	50.6	$5,219
Brownstown CUSD 201	19.9	0.0	1.3	0.0	57.5	$6,692
Brussels CUSD 42	19.4	0.0	7.4	0.0	50.4	$6,480
Bunker Hill CUSD 8	20.4	3.6	0.3	0.0	42.1	$4,247
Bureau Valley CUSD 340	20.4	0.3	3.5	0.2	46.9	$6,125
Bushnell Prairie City CUSD 170	19.7	0.1	0.9	0.5	60.6	$5,876
Byron CUSD 226	20.7	1.2	5.2	0.5	24.7	$9,127
Cahokia CUSD 187	15.5	88.7	1.5	0.0	91.6	$7,179
Cairo USD 1	15.2	88.5	0.4	0.0	98.7	$5,921
Calhoun CUSD 40	20.2	0.0	0.2	0.5	45.0	$5,713
Cambridge CUSD 227	20.4	1.6	1.4	0.6	32.0	$6,358
Canton Union SD 66	19.0	1.4	1.3	0.5	56.7	$5,271
Carlinville CUSD 1	21.8	1.2	0.7	0.3	44.3	$4,299
Carlyle CUSD 1	20.1	3.5	1.0	0.6	39.3	$5,287
Carmi-White County CUSD 5	18.8	0.7	0.8	0.0	47.7	$6,188
Carrier Mills-Stonefort CUSD 2	17.5	12.1	1.1	0.0	60.3	$7,055
Carrollton CUSD 1	19.5	0.0	1.4	0.5	49.0	$4,528
Carterville CUSD 5	22.9	3.5	3.5	0.0	43.0	$3,955
Casey-Westfield CUSD 4C	19.4	1.0	1.4	0.0	78.5	$5,501
Catlin CUSD 5	21.5	0.6	0.2	0.0	24.9	$5,789
Central A & M CUD 21	19.3	1.8	0.2	0.2	39.7	$5,208
Central CUSD 3	20.5	0.0	0.0	0.0	43.6	$4,876
Central CUSD 301	21.9	2.7	13.8	0.1	10.7	$6,587
Central CUSD 4	20.5	1.4	4.8	0.2	41.2	$5,356
Century CUSD 100	18.1	18.1	1.0	0.5	62.1	$4,768
Cerro Gordo CUSD 100	20.5	0.4	0.0	0.0	33.2	$4,573
Chadwick-Milledgeville CUSD 399	19.8	1.3	0.2	0.2	36.6	$5,320
Champaign CUSD 4	20.8	33.8	9.9	0.4	57.2	$7,186
Charleston CUSD 1	20.8	3.8	1.8	0.8	43.3	$5,249
Chester CUSD 139	20.5	3.4	3.6	0.0	48.6	$5,392

(continued)

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Table 8 (continued)

District	ACT composite	District Black %	District Hispanic %	District Native American %	District Low income %	IEPP
Christopher USD 99	19.0	0.4	0.1	0.0	61.9	$6,255
Cissna Park CUSD 6	22.0	1.7	4.4	0.0	1.7	$6,073
Clay City CUSD 10	20.3	0.3	1.2	0.0	52.1	$4,998
Clinton CUSD 15	20.1	0.9	4.0	0.3	47.1	$6,051
Coal City CUSD 1	20.3	0.4	5.3	0.1	30.6	$6,522
Cobden SUD 17	19.8	0.4	34.0	0.5	60.2	$5,208
Collinsville CUSD 10	19.6	11.9	19.7	0.2	58.0	$5,408
Columbia CUSD 4	21.6	0.6	3.1	0.1	11.8	$4,374
Cons SD 158	23.0	1.9	9.3	0.4	6.1	$4,797
Coulterville USD 1	18.6	5.2	0.0	1.9	56.1	$6,187
County of Winnebago SD 320	19.2	4.8	21.0	0.3	62.9	$5,512
Cowden-Herrick CUSD 3A	17.0	0.7	0.2	0.0	63.5	$4,888
Crab Orchard CUSD 3	18.7	0.0	0.6	0.2	43.9	$3,784
Crete Monee CUSD 201U	18.7	59.8	11.1	0.1	67.2	$6,145
Cumberland CUSD 77	20.0	0.0	0.2	0.1	43.7	$5,149
CUSD 200	23.7	6.3	16.5	0.1	26.1	$7,401
CUSD 201	20.9	5.0	17.7	0.0	33.8	$10,153
CUSD 3 Fulton County	18.3	1.2	0.6	0.8	58.0	$5,494
CUSD 300	20.6	5.2	34.1	0.1	45.5	$5,429
CUSD 4	20.5	0.0	0.6	0.0	32.6	$5,060
Dakota CUSD 201	21.7	0.9	2.8	0.0	30.3	$6,079
Danville CCSD 118	18.0	39.5	8.2	0.4	78.3	$6,062
Decatur SD 61	17.1	46.3	3.0	0.2	76.1	$4,538
Deer Creek-Mackinaw CUSD 701	21.1	1.3	2.2	0.0	27.1	$5,555
DeKalb CUSD 428	20.7	16.5	22.9	0.5	53.9	$6,812
Deland-Weldon CUSD 57	17.6	3.2	0.0	0.5	50.7	$6,642
Delavan CUSD 703	20.4	1.9	1.7	0.0	36.2	$6,664
DePue USD 103	18.3	0.2	72.4	3.8	76.2	$6,924
Dieterich CUSD 30	20.9	0.2	1.3	0.0	28.7	$5,242
Dixon USD 170	20.2	2.8	5.5	0.2	46.9	$5,613
Dongola USD 66	17.5	0.0	1.4	0.0	81.3	$5,829
Donovan CUSD 3	19.4	4.7	2.6	0.0	44.4	$4,449
Dunlap CUSD 323	23.9	5.9	2.4	0.1	11.5	$5,047

(continued)

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Table 8 (continued)

District	ACT composite	District Black %	District Hispanic %	District Native American %	District Low income %	IEPP
Dupo CUSD 196	17.7	3.9	3.2	0.4	60.0	$5,077
Duquoin CUSD 300	20.1	5.2	2.7	0.3	49.7	$5,907
Durand CUSD 322	21.2	0.2	2.3	0.0	31.3	$7,631
Earlville CUSD 9	20.0	0.7	9.1	0.0	48.6	$6,004
East Dubuque USD 119	20.9	0.6	1.9	0.0	31.3	$5,301
East Richland CUSD 1	20.7	0.5	3.3	0.1	56.0	$5,057
East St Louis SD 189	14.8	98.2	1.0	0.0	99.5	$7,493
Eastland CUSD 308	19.9	0.2	1.4	0.2	40.2	$7,335
Edgar County CUD 6	19.5	0.0	0.6	0.6	40.1	$5,798
Edinburg CUSD 4	19.6	2.4	0.7	0.0	12.1	$4,333
Edwards County CUSD 1	20.3	1.4	1.3	0.0	38.5	$5,351
Edwardsville CUSD 7	22.7	7.2	2.7	0.3	17.7	$4,716
Effingham CUSD 40	20.0	0.7	2.6	0.3	42.3	$4,861
Egyptian CUSD 5	17.5	18.5	1.1	0.0	99.6	$5,499
El Paso-Gridley CUSD 11	20.3	0.9	3.2	0.4	34.1	$6,696
Eldorado CUSD 4	17.4	0.5	2.1	0.5	57.6	$5,390
Elmhurst SD 205	24.0	2.8	13.4	0.1	16.9	$8,013
Elmwood CUSD 322	20.8	0.9	1.3	0.4	22.3	$6,039
Elmwood Park CUSD 401	20.2	2.9	42.2	0.5	37.2	$7,048
Elverado CUSD 196	19.0	1.0	2.0	0.2	61.5	$5,415
Erie CUSD 1	20.6	0.1	2.2	0.1	33.9	$9,931
Eureka CUD 140	21.7	1.0	2.0	0.3	28.2	$5,346
Farmington Central CUSD 265	19.0	0.5	3.9	0.0	40.2	$4,102
Fieldcrest CUSD 6	20.5	0.3	6.3	0.0	51.3	$6,495
Fisher CUSD 1	21.6	1.5	1.7	0.2	34.7	$5,180
Flanagan-Cornell Dist 74	19.3	1.4	4.5	0.0	32.7	$8,201
Flora CUSD 35	18.5	0.2	1.7	0.3	53.0	$4,910
Forrestville Valley CUSD 221	21.5	0.5	3.0	0.0	28.5	$5,638
Frankfort CUSD 168	18.8	0.6	1.2	0.6	64.3	$7,311
Franklin CUSD 1	18.8	0.0	0.3	1.0	32.0	$6,588
Freeport SD 145	19.3	23.7	8.9	0.2	71.4	$6,097
Galatia CUSD 1	19.8	0.0	0.7	0.9	48.3	$5,260
Galena USD 120	21.7	1.0	13.6	0.0	26.2	$8,086
Galesburg CUSD 205	19.1	13.0	11.2	0.1	67.1	$5,057

Table 8 (continued)

District	ACT composite	District Black %	District Hispanic %	District Native American %	District Low income %	IEPP
Gallatin CUSD 7	18.3	0.0	1.3	0.0	53.7	$5,551
Galva CUSD 224	20.2	2.7	4.8	0.0	53.2	$4,497
Geneseo CUSD 228	22.2	0.2	4.7	0.3	22.9	$4,387
Geneva CUSD 304	24.2	0.3	7.8	0.1	5.3	$6,807
Genoa Kingston CUSD 424	19.0	1.4	14.2	0.2	33.2	$6,019
Georgetown-Ridge Farm CUD 4	17.2	2.3	1.3	0.0	63.3	$5,726
Gibson City-Melvin-Sibley CUSD 5	22.7	0.7	1.0	0.0	39.7	$5,941
Gillespie CUSD 7	20.5	0.6	0.6	0.2	82.7	$4,752
Goreville CUD 1	19.0	0.0	1.0	0.0	37.5	$5,643
Granite City CUSD 9	17.9	12.6	9.1	0.6	65.2	$6,589
Grant Park CUSD 6	22.2	0.0	4.7	0.0	31.0	$5,059
Grayville CUSD 1	17.0	0.0	0.3	0.0	51.3	$5,324
Greenfield CUSD 10	18.9	0.0	0.0	0.0	40.0	$6,495
Greenview CUSD 200	19.1	0.0	0.7	0.0	42.9	$6,082
Griggsville-Perry CUSD 4	18.7	0.3	0.0	0.0	58.7	$5,864
Hamilton CCSD 328	19.7	0.7	0.5	0.0	43.9	$5,400
Hamilton Co CUSD 10	18.2	0.3	1.4	0.3	51.4	$5,192
Hardin County CUSD 1	17.1	1.2	0.5	0.0	59.0	$4,702
Harlem UD 122	19.7	4.2	10.0	0.4	57.2	$7,221
Harrisburg CUSD 3	18.9	4.5	1.9	0.1	63.3	$5,720
Hartsburg Emden CUSD 21	17.9	0.5	0.9	0.0	50.9	$7,582
Harvard CUSD 50	18.0	0.7	60.6	0.1	55.8	$5,681
Havana CUSD 126	19.4	0.3	0.1	0.4	57.0	$5,732
Henry-Senachwine CUSD 5	20.2	1.3	0.8	0.2	43.1	$7,022
Heritage CUSD 8	20.3	0.4	0.4	0.0	33.4	$5,332
Herrin CUSD 4	19.4	3.0	1.1	0.4	62.1	$4,718
Herscher CUSD 2	21.0	0.7	2.4	0.1	24.8	$5,446
Heyworth CUSD 4	20.8	0.3	2.6	0.0	26.1	$6,109
Hiawatha CUSD 426	19.0	1.0	13.3	0.0	41.4	$5,477
Highland CUSD 5	21.1	0.5	2.3	0.4	33.6	$5,385
Hillsboro CUSD 3	20.1	1.7	1.9	0.0	51.7	$5,180
Hinckley Big Rock CUSD 429	21.3	0.3	7.1	0.1	23.6	$7,403

(continued)

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Table 8 (continued)

District	ACT composite	District Black %	District Hispanic %	District Native American %	District Low income %	IEPP
Hoopeston Area CUSD 11	18.4	0.7	17.5	0.3	66.7	$5,834
Hutsonville CUSD 1	17.0	0.0	0.8	0.0	47.2	$5,849
Il Valley Central USD 321	21.5	0.5	2.5	0.5	31.4	$4,996
Illini Bluffs CUSD 327	19.9	0.5	2.7	0.5	25.3	$4,643
Illini Central CUSD 189	19.4	0.0	1.6	0.1	52.2	$4,407
Indian Creek CUSD 425	21.4	1.7	4.2	0.1	34.1	$6,925
Indian Prairie CUSD 204	24.1	9.3	10.5	0.2	18.1	$6,832
Iroquois County CUSD 9	19.7	1.6	7.8	0.2	61.2	$5,542
Iroquois West CUSD 10	20.5	0.4	30.0	0.1	56.6	$7,255
Jacksonville SD 117	19.0	8.2	3.5	0.0	65.4	$5,684
Jamaica CUSD 12	19.7	0.5	1.1	0.0	46.5	$5,911
Jasper County CUD 1	20.3	0.5	1.3	0.0	43.7	$4,773
Jersey CUSD 100	20.3	0.5	0.5	0.1	45.4	$5,276
Johnsburg CUSD 12	21.5	0.6	6.3	0.0	23.0	$7,855
Johnston City CUSD 1	19.5	0.7	1.3	0.4	62.9	$4,767
Joppa-Maple Grove UD 38	18.5	1.8	2.5	0.4	63.7	$5,937
Kaneland CUSD 302	22.2	1.9	11.3	0.1	16.6	$6,034
Kankakee SD 111	16.5	49.4	26.1	0.3	86.0	$6,559
Kansas CUSD 3	20.5	2.0	0.8	0.0	46.5	$6,759
Kewanee CUSD 229	18.7	10.1	17.2	0.2	74.6	$4,803
Knoxville CUSD 202	20.9	0.6	2.9	0.4	34.4	$4,239
La Moille CUSD 303	19.6	1.1	3.3	0.0	45.4	$6,270
Lake Zurich CUSD 95	24.2	1.1	7.6	0.8	11.5	$7,379
Lawrence County CUD 20	19.6	0.8	2.0	0.0	52.7	$4,876
Lebanon CUSD 9	20.5	23.3	1.0	0.2	38.8	$6,779
Leland CUSD 1	20.2	0.4	7.2	0.0	42.4	$7,087
Lena Winslow CUSD 202	21.7	1.9	1.8	0.0	37.8	$5,548
LeRoy CUSD 2	21.7	0.6	2.2	0.4	23.5	$5,510
Lewistown CUSD 97	18.9	0.1	0.7	0.0	46.9	$5,840
Lexington CUSD 7	20.0	0.0	0.0	0.0	23.1	$8,868
Liberty CUSD 2	19.8	0.6	0.5	0.2	29.0	$5,720
Lisle CUSD 202	22.7	9.9	10.5	0.1	29.2	$10,338
Litchfield CUSD 12	20.2	1.5	1.9	0.1	58.5	$4,649
Lowpoint-Washburn CUSD 21	20.4	1.3	4.6	0.0	49.6	$6,178

(continued)

Table 8 (continued)

District	ACT composite	District Black %	District Hispanic %	District Native American %	District Low income %	IEPP
Macomb CUSD 185	22.1	9.1	3.7	0.3	47.7	$5,816
Madison CUSD 12	15.2	91.2	2.8	0.0	98.7	$7,854
Mahomet-Seymour CUSD 3	23.4	0.8	1.2	0.3	22.2	$6,050
Manteno CUSD 5	20.3	3.7	8.2	0.4	37.1	$5,223
Marion CUSD 2	19.8	8.5	3.0	0.1	51.4	$4,403
Marissa CUSD 40	18.4	0.8	0.0	0.2	63.4	$5,595
Maroa Forsyth CUSD 2	22.0	4.9	1.0	0.3	18.7	$5,316
Marshall CUSD 2C	21.0	1.4	0.7	0.1	36.2	$3,476
Martinsville CUSD 3C	17.6	0.5	1.2	0.0	52.2	$4,793
Mascoutah CUD 19	22.5	10.7	7.3	0.8	24.2	$5,353
Massac UD 1	19.9	7.0	2.3	0.1	58.7	$5,047
Mattoon CUSD 2	20.7	3.1	3.5	0.1	58.8	$5,506
McLean County USD 5	21.9	11.3	6.6	0.3	30.6	$5,650
Mercer County School District 404	20.2	0.6	1.4	0.1	46.7	$5,105
Meredosia-Chambersburg CUSD 11	16.3	0.0	0.0	0.0	54.2	$6,870
Meridian CUSD 101	16.3	57.7	0.0	0.0	96.9	$6,554
Meridian CUSD 15	20.2	0.5	1.1	0.1	36.7	$4,603
Meridian CUSD 223	21.5	0.7	11.3	0.2	28.5	$4,993
Midland CUSD 7	22.1	0.1	2.3	0.3	40.4	$5,759
Midwest Central CUSD 191	20.1	0.8	0.7	0.4	52.1	$5,570
Moline USD 40	20.7	7.5	26.3	0.2	49.7	$5,990
Momence CUSD 1	19.9	16.1	18.4	0.0	70.1	$4,554
Monmouth-Roseville CUSD 238	18.7	3.0	22.4	0.2	71.7	$4,849
Monticello CUSD 25	22.2	1.1	0.9	0.1	18.7	$4,718
Morrison CUSD 6	21.0	0.4	3.4	0.3	42.4	$5,635
Morrisonville CUSD 1	20.0	0.3	0.0	0.0	39.4	$5,117
Morton CUSD 709	23.8	1.6	2.2	0.2	17.9	$5,953
Mount Olive CUSD 5	22.0	0.6	0.2	0.0	49.7	$5,962
Mt Pulaski CUSD 23	19.5	1.6	1.4	0.0	41.5	$6,771
Mt Zion CUSD 3	23.0	1.1	1.8	0.2	20.3	$4,480
Mulberry Grove CUSD 1	18.2	5.1	1.0	0.0	48.9	$5,048

(continued)

Table 8 (continued)

District	ACT composite	District Black %	District Hispanic %	District Native American %	District Low income %	IEPP
Murphysboro CUSD 186	18.5	1.2	5.4	0.0	99.2	$5,883
Naperville CUSD 203	25.1	5.1	9.0	0.2	13.8	$8,147
Neoga CUSD 3	21.7	1.3	0.3	0.3	36.9	$5,421
New Athens CUSD 60	20.1	0.6	0.2	0.6	30.1	$5,460
New Berlin CUSD 16	21.6	1.4	0.9	0.2	31.4	$4,656
Nokomis CUSD 22	20.4	0.4	1.3	0.1	44.5	$4,219
Norris City-Omaha-Enfield CUSD 3	18.5	0.1	1.3	0.0	52.5	$4,843
North Boone CUSD 200	19.3	1.9	23.7	0.2	47.6	$5,122
North Chicago SD 187	15.6	40.2	50.0	0.4	83.2	$7,202
North Clay CUSD 25	19.7	0.4	1.0	0.0	42.2	$4,277
North Greene CUSD 3	17.5	0.3	0.5	0.0	71.1	$5,958
North Mac CUSD 34	21.0	0.4	0.3	0.3	45.6	$4,473
North Wayne CUSD 200	18.4	0.7	0.4	0.0	47.7	$5,605
Northwestern CUSD 2	19.6	0.0	0.3	0.0	55.8	$6,681
Oakland CUSD 5	21.3	1.0	1.4	0.0	53.1	$5,125
Oakwood CUSD 76	19.1	0.9	4.7	0.0	44.2	$6,121
Oblong CUSD 4	20.3	0.5	2.0	0.0	43.5	$5,527
Odin PSD 722	19.5	2.3	0.7	0.0	68.0	$6,122
Okaw Valley CUSD 302	18.2	0.4	0.5	0.4	41.4	$4,863
Olympia CUSD 16	20.6	1.1	2.1	0.0	38.6	$5,936
Orangeville CUSD 203	18.2	1.0	2.1	0.3	29.0	$6,002
Oregon CUSD 220	20.2	0.5	7.6	0.3	44.5	$5,793
Orion CUSD 223	20.6	0.9	3.9	0.1	16.7	$5,294
Oswego CUSD 308	21.2	7.7	18.6	0.2	26.0	$4,860
Palestine CUSD 3	20.0	0.5	0.5	0.0	41.6	$6,052
Pana CUSD 8	19.4	0.7	1.1	0.4	58.7	$5,250
Panhandle CUSD 2	18.9	0.8	1.1	0.4	49.2	$5,054
Paris CUSD 4	20.4	0.0	2.0	0.0	29.0	$5,229
Paris-Union SD 95	19.1	0.2	0.9	0.1	63.9	$3,873
Patoka CUSD 100	17.4	0.4	0.0	0.0	58.1	$5,628
Paw CUSD 271	20.9	3.0	7.8	0.9	41.1	$6,932
Pawnee CUSD 11	20.5	0.5	0.0	0.0	29.9	$4,649
Paxton-Buckley-Loda CUD 10	21.2	0.6	5.4	0.1	38.0	$5,668

(continued)

Table 8 (continued)

District	ACT composite	District Black %	District Hispanic %	District Native American %	District Low income %	IEPP
Payson CUSD 1	19.7	0.0	0.0	0.0	45.4	$5,115
Pearl City CUSD 200	20.5	1.2	5.3	0.0	24.8	$6,350
Pecatonica CUSD 321	21.4	0.4	4.1	0.9	22.5	$5,180
Peoria Heights CUSD 325	18.5	8.8	2.5	0.0	49.7	$6,161
Peoria SD 150	18.3	56.0	9.6	0.3	73.2	$6,736
Peotone CUSD 207U	20.8	0.9	9.0	0.2	17.5	$5,561
Pikeland CUSD 10	19.2	0.3	0.7	0.3	47.9	$5,381
Plainfield SD 202	20.7	9.1	22.8	0.4	21.5	$5,544
Plano CUSD 88	18.5	8.8	44.5	0.3	54.2	$5,150
Pleasant Hill CUSD 3	18.1	0.6	0.0	0.0	53.4	$5,881
Pleasant Plains CUSD 8	21.5	1.4	1.8	0.5	12.1	$5,436
Polo CUSD 222	19.7	0.6	6.7	0.3	43.2	$5,968
Pope Co CUD 1	19.2	0.4	1.1	0.0	54.3	$4,817
Porta CUSD 202	20.5	1.0	0.7	0.6	36.0	$5,015
Prairie Central CUSD 8	20.8	1.1	3.3	0.1	46.1	$6,177
Princeville CUSD 326	22.5	1.1	6.8	0.2	30.0	$5,857
Prophetstown-Lyndon-Tampico CUSD3	18.6	0.3	2.0	0.7	51.2	$5,705
Putnam County CUSD 535	19.2	1.3	9.1	0.0	31.9	$5,806
Quincy SD 172	19.4	9.3	1.8	0.1	57.0	$5,518
R O W V A CUSD 208	21.0	0.9	2.6	0.0	43.6	$5,605
Ramsey CUSD 204	18.1	0.8	0.4	0.0	60.8	$5,776
Red Bud CUSD 132	19.7	0.1	1.0	0.0	38.5	$5,368
Red Hill CUSD 10	21.9	0.2	0.7	0.0	54.9	$4,847
Reed Custer CUSD 255U	20.3	0.6	3.5	0.2	46.5	$7,802
Ridgeview CUSD 19	21.1	2.4	4.1	0.5	47.7	$5,937
River Bend CUSD 2	20.3	0.2	2.5	0.1	35.9	$5,142
River Ridge CUSD 210	21.0	0.6	4.0	0.6	44.1	$8,326
Riverdale CUSD 100	20.2	0.8	1.6	0.0	28.0	$5,441
Riverton CUSD 14	19.8	1.9	0.9	0.4	48.2	$5,415
Roanoke Benson CUSD 60	22.1	0.6	2.2	0.0	26.8	$5,842
Robinson CUSD 2	20.4	1.3	2.8	0.0	46.7	$5,198
Rochester CUSD 3A	22.5	1.5	1.3	0.1	13.9	$4,075
Rock Island SD 41	17.6	27.4	14.8	0.2	62.4	$6,022

(continued)

Table 8 (continued)

District	ACT composite	District Black %	District Hispanic %	District Native American %	District Low income %	IEPP
Rockford SD 205	18.2	29.6	26.5	0.2	78.7	$6,440
Rockridge CUSD 300	19.9	0.5	1.1	0.0	20.3	$6,190
Round Lake CUSD 116	17.8	6.8	72.4	0.4	77.4	$5,762
Roxana CUSD 1	18.2	1.9	3.5	0.2	62.8	$6,332
Sandoval CUSD 501	18.2	0.2	1.4	0.4	75.3	$5,863
Sandwich CUSD 430	20.2	0.3	12.9	0.2	37.8	$7,627
Sangamon Valley CUSD 9	19.1	0.4	1.3	0.0	34.2	$5,440
Scales Mound CUSD 211	21.6	0.0	0.4	0.0	24.2	$9,090
Schuyler-Industry CUSD 5	18.7	2.8	1.8	0.0	43.2	$5,313
Scott-Morgan CUSD 2	15.7	0.0	0.4	0.0	55.1	$5,164
SD U-46	19.5	6.8	49.6	1.2	59.5	$5,889
Serena CUSD 2	20.5	0.7	7.8	0.1	43.4	$7,286
Sesser-Valier CUSD 196	18.8	0.0	2.8	0.6	51.7	$4,860
Shawnee CUSD 84	17.9	0.8	0.5	0.0	99.7	$6,362
Shelbyville CUSD 4	20.8	0.6	0.7	0.1	43.9	$5,405
Sherrard CUSD 200	20.2	1.3	4.2	0.1	36.5	$5,092
Shiloh CUSD 1	19.8	1.2	0.5	0.0	37.6	$4,852
Somonauk CUSD 432	19.4	0.2	6.2	0.5	24.2	$5,333
South Central CUD 401	18.6	0.7	0.9	0.0	68.2	$5,591
South Fork SD 14	20.5	1.3	0.0	0.0	56.7	$4,770
Southeastern CUSD 337	19.2	0.0	0.2	0.0	61.1	$5,605
Southwestern CUSD 9	19.6	1.0	1.0	0.4	38.8	$5,148
Sparta CUSD 140	18.0	16.2	0.9	0.0	35.3	$5,471
Spoon River Valley CUSD 4	20.4	0.0	1.3	0.3	43.0	$6,126
Springfield SD 186	18.7	38.8	2.6	0.2	68.0	$7,108
St Charles CUSD 303	23.6	1.5	10.5	0.3	16.6	$6,939
St Elmo CUSD 202	17.9	0.0	1.3	0.0	60.9	$5,294
Stark County CUSD 100	20.1	0.6	1.5	1.1	43.6	$6,335
Staunton CUSD 6	20.0	0.4	1.1	0.3	34.6	$4,983
Steeleville CUSD 138	20.2	0.0	0.9	0.2	35.2	$5,909
Sterling CUSD 5	19.9	3.5	32.1	0.8	58.6	$6,184
Stewardson-Strasburg CUD 5A	19.9	0.0	0.5	0.0	36.0	$4,702
Stockton CUSD 206	20.8	0.2	1.3	0.0	36.6	$5,891
Sullivan CUSD 300	20.7	0.2	1.8	0.0	46.6	$5,296

Table 8 (continued)

District	ACT composite	District Black %	District Hispanic %	District Native American %	District Low income %	IEPP
Sycamore CUSD 427	21.8	3.2	8.3	0.3	28.6	$6,422
Taylorville CUSD 3	20.1	1.0	1.1	0.2	55.1	$4,503
Teutopolis CUSD 50	22.7	0.4	0.4	0.0	12.6	$4,891
Thompsonville CUSD 174	18.2	0.0	0.0	0.0	52.6	$4,960
Tolono CUSD 7	20.3	0.5	0.3	0.3	32.5	$5,115
Tremont CUSD 702	22.4	1.2	2.8	0.1	16.7	$5,902
Tri City CUSD 1	18.8	0.6	1.3	0.5	41.4	$5,058
Tri Point CUSD 6-J	18.3	1.3	3.6	1.3	54.9	$7,967
Tri Valley CUSD 3	22.0	1.4	1.1	0.4	8.9	$7,432
Triad CUSD 2	21.4	1.7	1.9	0.2	22.1	$4,879
Trico CUSD 176	18.8	0.2	2.9	0.0	52.8	$5,087
Triopia CUSD 27	19.9	0.0	1.3	0.8	33.5	$5,779
Tuscola CUSD 301	20.3	0.1	2.6	0.0	37.5	$5,257
United CUSD 304	20.5	2.4	2.6	0.4	45.1	$4,620
Urbana SD 116	19.6	35.3	11.7	0.4	69.8	$7,405
V I T CUSD 2	17.7	0.0	4.1	0.0	45.2	$6,820
Valley View CUSD 365U	19.0	20.3	41.1	0.3	63.7	$7,520
Valmeyer CUSD 3	23.1	1.0	0.6	0.0	25.9	$5,185
Vandalia CUSD 203	18.6	0.1	1.7	0.6	55.6	$5,977
Villa Grove CUSD 302	21.2	0.2	1.1	0.0	40.9	$5,303
Virginia CUSD 64	18.8	0.7	1.7	0.7	52.2	$4,970
Wabash CUSD 348	18.5	0.2	0.5	0.0	49.4	$6,080
Waltonville CUSD 1	18.8	1.1	0.3	0.3	37.7	$6,280
Warren CUSD 205	20.1	0.5	0.2	0.0	31.4	$6,408
Warrensburg-Latham CUSD 11	19.6	2.0	1.4	0.0	40.2	$4,398
Warsaw CUSD 316	19.7	0.0	0.2	0.0	40.8	$5,608
Waterloo CUSD 5	21.5	0.2	1.3	0.2	25.9	$4,759
Wauconda CUSD 118	21.5	1.4	26.8	0.4	26.2	$4,914
Waukegan CUSD 60	16.9	15.5	76.8	0.4	71.5	$6,638
Waverly CUSD 6	18.8	0.3	0.0	0.0	42.4	$6,222
Wayne City CUSD 100	19.9	1.1	0.9	0.2	55.1	$5,162
Wesclin CUSD 3	22.2	2.0	5.9	0.2	31.6	$5,378
West Carroll CUSD 314	18.6	2.4	6.2	0.7	56.9	$5,996
West Central CUSD 235	21.0	0.3	2.2	0.3	55.1	$5,392

Table 8 (continued)

District	ACT composite	District Black %	District Hispanic %	District Native American %	District Low income %	IEPP
West Prairie CUSD 103	20.1	0.6	0.3	0.2	49.8	$6,678
West Richland CUSD 2	18.4	0.8	0.5	0.0	48.9	$4,375
West Washington Co CUD 10	21.4	0.0	2.2	0.0	33.7	$5,042
Western CUSD 12	18.1	0.2	1.9	0.2	57.3	$4,908
Westville CUSD 2	18.5	1.4	2.4	0.5	57.8	$4,893
Wethersfield CUSD 230	18.7	3.1	14.8	0.0	47.6	$5,177
Williamsfield CUSD 210	20.1	1.0	2.6	0.0	32.6	$7,255
Williamsville CUSD 15	23.5	0.7	0.9	0.1	12.4	$4,379
Wilmington CUSD 209U	20.1	0.5	3.0	0.7	42.3	$4,400
Winchester CUSD 1	19.8	0.0	0.4	0.3	44.7	$5,822
Windsor CUSD 1	19.7	0.0	0.3	0.0	49.1	$5,242
Winnebago CUSD 323	21.6	3.3	5.6	0.9	30.2	$5,748
Woodland CUSD 5	20.3	1.0	1.5	0.0	44.3	$6,013
Woodstock CUSD 200	20.2	2.2	32.3	0.3	48.6	$6,063
Yorkville CUSD 115	20.3	4.9	13.2	0.1	19.5	$5,046
Zeigler-Royalton CUSD 188	17.7	0.5	0.8	0.0	73.4	$6,654