The Effectiveness of No Child Left Behind

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Abstract

In 2002 a new law was enacted that changed the education system of America, No Child Left Behind (NCLB). NCLB sets standards for every student and school district across the nation requiring that each student reach a proficient level of mathematical performance by the 2013-14 school year. Whether the student is from a rich community or poor community, that student must be at the same level in mathematical assessment. Students who are classified as disabled are also included in this legislation. Since NCLB was enacted, teachers across the nation had complained about the expectations this law set for their students. The United States Department of Education indicated their expectations are more realistic than what teachers believe it to be. This notion is based on the information they collected through the National Assessment of Educational Progress (NAEP). The NAEP is a national test that is offered in each state, but many schools decided not to use the NAEP and used their own alternate state assessment instead. For example, Wisconsin is a state where every school district does not administer the NAEP. Most school districts used the Wisconsin Knowledge and Concepts Examination (WKCE), a test that all 4th, 8th, and 10th grade students took before the Common Core State Standards came into effect in 2014 and changed the testing system used in Wisconsin.

This study investigated Wisconsin state assessment data for mathematics gathered by the WKCE tests for grades 4th, 8th, and 10th for the 1997-99 school year through the 2013-14 school year. The data collected was taken from the Department of Public Education public site. Student participants were grouped into different categories to compare over time to see if there were any noticeable significant differences. These groups include gender, ethnicity, and disability both at an urban district level and the state level. Data was statistically analyzed through multiple one-tailed t-tests assuming equal variances at a .05 level of significance.

The results from the first set of hypotheses, which compared the state of Wisconsin to a large urban district, concluded that the NCLB statute had no significant impact on student achievement in mathematics when using beginning year scores compared to ending year scores for consecutive testing years were compared for grade levels 4, 8, and 10. However, the study did reveal student achievement in the urban district was significantly less compared to student achievement in the state of Wisconsin.

The results from the second set of hypotheses, which compared gender performance in mathematics, concluded that the NCLB statute had no significant impact on closing the gender gap between males and females. In the state of Wisconsin, it was found that there is a significant gender gap in grade levels 4, 8, and 10 in mathematics where males outperformed females. However, the study did reveal that a significant gender gap only existed in grade level 10 for the urban school district in mathematics. The lower grade levels showed no indication of a gender gap in the urban district.

The results from the third set of hypotheses, which compared ethnic performance in mathematics, concluded that the NCLB statute had no significant impact on closing the achievement gap between white, black, and Hispanic students. In both the state of Wisconsin and the urban district, there was a significant achievement gap between white students and their black and Hispanic peers. Also, Hispanic students showed significant achievement gains when compared to their black peers, where Hispanic students outperformed the black students.

The results from the fourth set of hypotheses, which compared disabled students to non-disabled students performance in mathematics, concluded that the NCLB statute had no significant impact on closing the achievement gap between disabled and non-disabled students. Disabled students performed significantly lower than their non-disabled peers.
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Chapter 1

Introduction

Background

No Child Left Behind, NCLB, was a powerful, sweeping, and controversial law that addressed many aspects of public education. In fact the law, which is the most recent reauthorization of the Elementary and Secondary Education Act, ESEA, is arguably the most significant piece of federal education legislation in history (Savage, 2006). In the few years since its enactment, NCLB dramatically increased the federal role in education and required states, school districts, and schools to focus on the outcomes of teaching. This is because Congress’s primary goal in passing NCLB was to hold states and public schools accountable for improving student achievement in reading and mathematics (Yell & Drasgrow, 2005).

No Child Left Behind affects all students in general education programs and students with disabilities who attend special education programs for part or all of their instruction. The law required that schools demonstrate improvement in student achievement so that all public school students are proficient in reading and mathematics by the end of the 2013-14 school year. Even more so, NCLB mandated that states developed measurable milestones for schools to use to gauge their success in improving student achievement until the goal of 100% student proficiency is reached by the deadline (Savage, 2006).

Needless to say, NCLB has raised many concerns ever since it was enacted into law in 2002. The problem with NCLB is that the governments’ research information has been collected from the National Assessment of Educational Progress, otherwise known as NAEP, a national test that only sampled a small nonrandom population of the country. Since the sample is so small and nonrandom, compared to the rest of the nation, teachers report that the standards and benchmarks of NCLB are unrealistic to meet. Most schools cannot afford to take the
NAEP and therefore look for lower cost tests to give to their students. Due to this, the researcher used a more realistic sample within the state of Wisconsin and more specifically a medium sized metropolitan school district within Wisconsin. The information collected shows a more realistic assessment result since it was collected from a metropolitan urban school district that may have not taken the NAEP. By looking at these results, the researcher was able to determine whether or not the Wisconsin state test yields results comparable to the national NAEP results. If so, then NCLB has succeeded in its attempt to improve the nation’s education system. If not, then NCLB has not succeeded and is not benefitting the country since it would have wasted billions of dollars in its attempt to improve education.

Research Questions

Following are the four research questions for this study.

1. Since NCLB emphasizes better teacher practices and student accountability, will a metropolitan urban school district perform at the same academic level compared to the state it is located in in the area of mathematics?

2. Does a gender gap still exist or is it non-existent in mathematics?

3. Are all students performing at the same academic standards?

4. Has NCLB significantly impacted disabled students academic performance compared to their nondisabled peers?

Purpose of the Study

The purpose of this research study was to show whether or not the state of Wisconsin has benefitted and improved in the education of its students from the NCLB standards in the
area of mathematics. The researcher collected data from the 1998-99 school year, when data was first compiled, through the 2013-14 school year when NCLB stated 100% of students will be proficient in reading and mathematics. Not only did the researcher look at the state of Wisconsin but also at a medium sized metropolitan district in Wisconsin. This district is considered an urban school district and is one district that rarely has students assessed by the NAEP tests. By looking directly at the learning assessment results of the urban school district and analyzing these results over the past ten years, the researcher will determine whether NCLB has helped or hindered this education system. Because this district is considered an urban school district, it is hypothesized that the assessment performance of this district compared to the state of Wisconsin will be significantly lower. Furthermore, the researcher examined specific areas of the educational research within Wisconsin and the urban district and compared the results as well. These areas included: male versus female performance, white versus black versus Hispanic performance, and disabled students versus non-disabled students.

The main purpose for this research study was that the researcher believes that the NCLB has not been successful over the years and hopes to demonstrate that this is true by an analysis of the urban district’s learning results. This research study is being done because the researcher is deeply involved in the education profession, which has been impacted by the standards of the NCLB legislation.

**Hypotheses**

In this study the researcher developed fifteen different sets of null and alternative hypotheses that examined both Wisconsin student learning results and the urban district’s
student learning results. Each hypothesis mentioned below was analyzed for all 4th, 8th, and 10th grade student results. The sets are as follows:

Null Hypothesis 1: The mean beginning year scores of Wisconsin will be greater than or equal to the mean ending year scores of Wisconsin.

Alternative Hypothesis 1: The mean beginning year scores of Wisconsin will be less than the mean ending scores of Wisconsin.

Null Hypothesis 2: The mean beginning year scores of the urban district will be greater than or equal to the mean ending year scores of the district.

Alternative Hypothesis 2: The mean beginning year scores of the urban district will be less than the mean ending scores of district.

Null Hypothesis 3: The mean n-year scores of Wisconsin will be greater than or equal to the mean (n+1)-year scores of Wisconsin.

Alternative Hypothesis 3: The mean n-year scores of Wisconsin will be less than the mean (n+1)-year scores of Wisconsin.

Null Hypothesis 4: The mean n-year scores of the urban district will be greater than or equal to the mean (n+1)-year scores of the district.

Alternative Hypothesis 4: The mean n-year scores of the urban district will be less than the mean (n+1)-year scores of the district.

Null Hypothesis 5: The mean year scores of the urban district will be greater than or equal to the mean year scores of Wisconsin.

Alternative Hypothesis 5: The mean year scores of the urban district will be less than the mean year scores of Wisconsin.
Null Hypothesis 6: The mean scores of females in Wisconsin will be greater than or equal to the mean scores of males in Wisconsin.

Alternative Hypothesis 6: The mean scores of females in Wisconsin will be less than the mean scores of males in Wisconsin.

Null Hypothesis 7: The mean scores of females in the urban district will be greater than or equal to the mean scores of males in the district.

Alternative Hypothesis 7: The mean scores of females in the urban district will be less than the mean scores of males in the district.

Null Hypothesis 8: The mean scores of white students in Wisconsin will be greater than or equal to the mean scores of black students in Wisconsin.

Alternative Hypothesis 8: The mean scores of white students in Wisconsin will be less than the mean scores of black students in Wisconsin.

Null Hypothesis 9: The mean scores of white students in Wisconsin will be greater than or equal to the mean scores of Hispanic students in Wisconsin.

Alternative Hypothesis 9: The mean scores of white students in Wisconsin will be less than the mean scores of Hispanic students in Wisconsin.

Null Hypothesis 10: The mean scores of black students in Wisconsin will be greater than or equal to the mean scores of Hispanic students in Wisconsin.

Alternative Hypothesis 10: The mean scores of black students in Wisconsin will be less than the mean scores of Hispanic students in Wisconsin.

Null Hypothesis 11: The mean scores of white students in the urban district will be greater than or equal to the mean scores of black students in the district.
Alternative Hypothesis 11: The mean scores of white students in the urban district will be less than the mean scores of black students in the district.

Null Hypothesis 12: The mean scores of white students in the urban district will be greater than or equal to the mean scores of Hispanic students in the district.

Alternative Hypothesis 12: The mean scores of white students in the urban district will be less than the mean scores of Hispanic students in district.

Null Hypothesis 13: The mean scores of black students in the urban district will be greater than or equal to the mean scores of Hispanic students in the district.

Alternative Hypothesis 13: Stated that the mean scores of black students in the urban district will less than the mean scores of Hispanic students in the district.

Null Hypothesis 14: The mean scores of disabled students in Wisconsin will be greater than or equal to the mean scores of non-disabled students in Wisconsin.

Alternative Hypothesis 14: The mean scores of disabled students in Wisconsin will be less than the mean scores of non-disabled students in Wisconsin.

Null Hypothesis 15: The mean scores of disabled students in the urban district will be greater than or equal to the mean scores of non-disabled students in the district.

Alternative Hypothesis 15: The mean scores of disabled students in the urban district will be less than the mean scores of non-disabled students in the district.

**Definition of Terms**

The following terms will be referenced throughout this research study.
No Child Left Behind- This term refers to the No Child Left Behind Act of 2001, which was a federal law signed and enacted in 2002 by George W. Bush that held schools accountable to higher standards.

 Adequate Yearly Progress- The minimum level of improvement that schools must achieve each year according to state requirements.

 Students with Disabilities- Students with Disabilities as defined by the state of Wisconsin means a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations, including conditions such as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia.

 Students without disabilities- Students without Disabilities as defined by the state of Wisconsin as those students who do not have a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations, including conditions such as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia.

 White- As defined by the Wisconsin Department of Education as a person having origins in any of the original peoples of Europe, the Middle East, or North Africa.

 Black- As defined by the Wisconsin Department of Education as a person having origins in any of the black racial groups of Africa.
**Hispanic**- As defined by the Wisconsin Department of Education as a Hispanic/Latino person is of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race. The term "Spanish origin" can be used in addition to "Hispanic or Latino."

**Wisconsin Knowledge and Concepts Examination (WKCE)**- This was the state mandated standardized test that all students grades 3-8 and 10 were required to take until the 2014-15 school year when Wisconsin adopted a new testing system. Also referred to as WKCE.

**National Assessment of Educational Progress (NAEP)**- The largest nationally represented and continuing assessment of what America’s students know and can do in various subject such as mathematics, reading, science, and writing.

**Beginning Year**- This refers to the 1997-98 school year for the state of Wisconsin.

**Ending Year**- This refers to the 2013-14 school year for the state of Wisconsin.

**Mean n-year**- This refers to the current school year that is observed.

**Mean (n+1)-year**- This refers to the next consecutive school year this is currently observed.

**Chapter Summary**

In this chapter the purpose and importance of this study were described. No Child Left Behind was a federal law that has changed the face of education in this country. Along the way it has raised many controversies on whether it was successful or not. This study investigated whether or not the NCLB legislation had helped or hindered the U.S.. Data that is reported on the success of NCLB came from the National Assessment of Educational Progress, which only
assessed a small sample of the United States. The researcher gathered learning data for both
the state of Wisconsin and a large urban district in Wisconsin from the WKCE rather than the
NAEP database. Fifteen different hypotheses are presented to determine the impact that NCLB
had left on Wisconsin. The information gathered looked at Wisconsin and the urban district, as
a whole population, as well as specific areas including: gender, ethnicity, and disability
comparisons.
Chapter 2

Review of Related Literature

Introduction

The No Child Left Behind, NCLB, legislation was created as part of the 2002 federal education law under the Bush administration and was designed to help boost student performance in every school nationwide. The purpose of this study was to investigate how much of an impact the legislation of NCLB has had on the state of Wisconsin. In order to gather literature to test the hypotheses, research questions, and results of this research, this researcher searched a collection of resources through multiple books and databases. While reading through previous published research discussing NCLB and the successes or pitfalls of the legislation, several themes emerged. This literature review is organized around these themes.

The Road to No Child Left Behind

Passed by the U.S. Congress in the spring of 1965 and conceived as part of Lyndon Johnson’s War on Poverty, the Elementary and Secondary Education Act (ESEA) focused primarily on delivering federal aid to help level the educational playing field for poor and minority children. The EASA was one of the most significant and expansive education policies ever undertaken by the federal government (Robelen, 2005). President Johnson signed the legislation into law in Stonewall, Texas, in front of the one-room schoolhouse he attended as a child. The law outlined and provided funds for many educational programs deemed essential for children living in poverty. The act was the first comprehensive federal education law that provided substantial monetary funds to schools serving children from low-income families (Robelen, 2005).
The largest financial component of the legislation was Title I. The original legislative intent of Title I was “to provide financial assistance to local educational agencies serving areas with high concentrations of children from low-income families to expand and improve their educational programs by various means” (Thomas & Brady, pg. 3). A major debate ensued in Congress shortly after the passage of ESEA as to whether Title I services should be restricted to poor children who were educationally disadvantaged or should include all children at risk for school failure, regardless of socio-economic status. According to Thomas and Brady (2005), shortly after implementation, legislative ambiguities in ESEA coupled with minimal congressional oversight led to abuses of ESEA funds, including provision of general aid funds to all students instead of targeted resources for the special needs of educationally disadvantaged students. As a result, Congress amended ESEA four times between 1965 and 1980, in each instance reauthorizing the legislation with the goal of more precisely achieving the intent of assisting educationally disadvantaged students from low-income families.

As the nation’s leadership was evolving and changing so too was the reform of education. When Clinton took office a major part of his administration’s efforts to reform education was the Improving America’s Schools Act of 1994 (IASA). This law was based upon research that supports the following four key elements of any comprehensive education improvement effort: 1) high standards for all students; 2) teachers better trained for teaching to high standards; 3) flexibility to stimulate local reform, coupled with accountability for results; and 4) close partnerships among families, communities, and schools. By focusing resources on these key elements of education improvement, the IASA, the law that reauthorizes the Elementary and Secondary Education Act of 1965, substantially contributes to advancing the quality of teaching and learning for all students (Riley, 1995).
Majority of people agree that schools should teach students specific knowledge and the skills and to use that knowledge to reason and solve problems. Getting standards aligned throughout a state is not easily accomplished, but it was one of the main elements of the IASA. According to Riley (1995), aligning curriculum of the educational systems to high content standards would improve student learning. The IASA aligned with the educational theory that testing students is a good way to measure student learning. A focus on teaching and learning was the second element of the IASA. According to Fege (1999), teachers were to use effective instructional strategies to improve student learning. Examples of effective techniques would include having strong class discipline to increase the amount of quality learning time, extending different learning opportunities to all students, and team-teaching. The act invested in high-quality, professional development for teachers in order to improve the quality of instruction in schools.

Giving schools the flexibility to educate their students as they saw fit was the third element of the IASA. The legislation expanded opportunities for schools to operate school-wide programs so that high-poverty schools can integrate their services, strategies, and resources including resources under Title I and other department programs to reform comprehensively the entire instructional plan for all children in the school. However, schools would still be accountable for setting high standards and educating all of its students. The last element of the IASA called for schools to implement comprehensive partnership programs with parents and the community. Research and practice show that substantial, on-going family involvement in children’s learning is a critical link to achieving a high-quality education and a safe, disciplined learning environment (Riley, 1995). Schools are uniquely positioned to bring together families and the community to support student learning in ways that reflect school
goals and the community’s diversity and values.

As previously mentioned, the IASA emphasized standards and assessments. With the passage of the IASA, congressional demands on student testing and accountability became widespread. This trend would continue to 2002, with the passage of the No Child Left Behind Act (NCLB).

**Background of No Child Left Behind**

The statement purpose of the No Child Left Behind Act (NCLB) declares that it was implemented in order to ensure that all children have a fair, equal, and significant opportunity to obtain a high-quality education (Hoff, 2007). The statement of purpose developed out of a concern for certain groups of students who have traditionally not performed well in school. It was these students that Congress had in mind when it passed its most recent and expansive federal educational legislation in 2001. The legislation was the first federal effort to hold all public K-12 schools accountable for the performance of their students. Similar to ESEA, NCLB is grounded in the practice of standards-based education reform. Particular attention was focused on the elimination of racial and socioeconomic inequalities in public schools and the lack of quality educational opportunities available for disadvantaged populations (Thomas & Brady, 2005). The major objectives of NCLB are increasing accountability for results, focusing on researched-based practices, providing better-quality instruction, and empowering parents with choice options. NCLB reflects the original intent of the ESEA by focusing on helping disadvantaged children reach grade-level proficiency and strengthening basic and advanced skills. In particular, NCLB includes explicit requirements to ensure that students who are served by Title I programs are given the opportunity to achieve high standards and are held to the same high expectations as all other students around the country (Hoff, 2007).
The NCLB was a large piece of legislation that covers many aspects of education. On the local level, it allowed states to retain control of certain parts of education, including the right to control their own curriculum and methods of teaching. Nationally, the NCLB created mandated standards and assessment requirements for all schools receiving Title I funds. The goal of the NCLB was to improve the American educational system, and its policies affected the way schools operated around the country.

**Stronger Accountability**

According to Thomas and Brady (2005), although very similar to ESEA, NCLB takes the commitment to improving the educational experiences of historically disadvantaged populations a step further. Provisions were added to raise the bar of academic standards and hold state and local educational agencies accountable for student achievement. The new policy links federal funding to student performance outcomes and imposes sanctions for low student performance. All children are expected to reach grade level proficiency by the 2013–2014 school year. NCLB differs from the earlier Adequate Yearly Progress (AYP) requirements of ESEA by requiring schools to also demonstrate progress within student subgroups. Research collected by Linn, Baker, and Betebenner (2002) stated that NCLB specifies that states must develop adequate yearly progress (AYP) objectives consistent with the following stipulations in the law:

- States must develop AYP statewide measurable objectives for improved achievement by all students and for specific groups: economically disadvantaged students, students from major racial and ethnic groups, students with disabilities, and students with limited English proficiency.
• The objectives must be set with the goal of having all students at the “proficient” level or above within 12 years.

• AYP must be based primarily on state assessments, but must also include one additional academic indicator

• The AYP objectives must be assessed at the school level. At the end of 2 years, schools that have failed to meet their AYP objective for 2 consecutive years will be identified for improvement.

• School AYP results must be reported separately for each group of students identified above so that it can be determined whether each student group met the AYP objective.

• At least 95% of each group must participate in state assessments.

• States may aggregate up to 3 years of data in making AYP determination.

The NCLB strengthened the federal government’s role in public education, with the goal of improving the academic achievement of all students, regardless of race, ethnic group, gender, or family income. The legislation placed a priority on measurable student achievement, which in turn has led to an increase in student testing.

**NCLB has led to over-assessing**

Since No Child Left Behind was enacted, test scores have been focused on more and more. The broad goal of NCLB was to raise the achievement of all students, especially underperforming groups, and to close the achievement gap that parallels race and class distinctions (Meier, 2004). Because of this, parents believe that many schools across the nation are “teaching to the test”, in other words students are learning how to be good test takers and not necessarily learning much about their actual subject (Randolph, 2012). Students in
elementary through high school are being exposed to an unprecedented number of tests, especially in reading and mathematics. The time spent talking about, preparing for, and taking tests have increased exponentially since NCLB was enacted into law (Nichols, 2008). Students are more likely to enjoy learning when activities are meaningful, fun, and interesting. When most of the focus in school is on testing the interest of the students decreases drastically and this is creating more and more reluctant learners.

Schools overvalued the tests and undervalued the curriculum and therefore curriculum was narrowed. Students today do not get the wide variety of information that used to be taught. Today they look at a small spectrum of information but go into great depth about this information so they understand it when it sits in front of them on a test. According to Meier (2004), a disturbing phenomenon popping up all across the nation is the incentives given to students such as, pep assemblies, ice cream socials, and other similar events that are meant to “motivate” students to do well on state-mandated tests. More and more pressure is being put on the students to pass these tests. However, if a student does not score well on the test and it is a repeated event the student shuts down his or her learning. Chronic failure is demeaning, causing many engaged students to give up, drop out, or become increasingly cynical about schooling. These outcomes are likely because the underfunded bill layers onto a grossly unequal and, in many communities, inadequately funded-school systems. A set of un-meetable tests score targets that disproportionately penalize schools serving the neediest students, caused schools to create strong incentives to keep out or push out those students who are low achieving in order to raise school average test scores (Meier, 2004). A high-stakes testing environment sends a message to students that the primary purpose of learning is to score well on a test when simply this is not the case.
The sad and realistic result that has come from these low-test scores is that most states have adopted very low definitions for proficiency. Tennessee, for example, reports that 90 percent of its 4th graders are proficient in reading, but the federal testing by NAEP finds that only 27 percent are (Ravitch, 2009). Most states have endorsed low standards and inflated their scores to meet the law’s unrealistic requirements. The pressure for students to score well on these tests and the large incentives for students to perform, has not eliminated the issues associated with reluctant learners.

No Child Left Behind has not only exacerbated the problems of reluctant learners already in schools, but also increased additional reluctant learners for schools to deal with. Jacobson (2008) argues that the requirements for mathematics have such high expectations that it has caused numerous students to attend summer school. So many students, that some school districts do not have the room or the funds to pay teachers to help these students that do not meet the requirements and therefore become more reluctant and frustrated learners. States like Georgia, Texas, and California are dealing with this very problem. Curriculum revisions have become a huge issue for the states mentioned above. School districts were forced to look at their curriculum and decide what can stay and what must be changed in order for the students to succeed on these state tests. The new standards in the Common Core, which are a set of high-quality academic standards in mathematics and English language arts/literacy, are much more rigorous than mathematics students had to meet in the past. These learning goals outline what a student should know and be able to do at the end of each grade. The standards were created to ensure that all students graduate from high school with the skills and knowledge necessary to succeed in college, career, and life, regardless of where they live. In today’s mathematics classroom, most students are being exposed to Algebra, Geometry, and Statistics
by the time they reach 8th grade. If students are over assessed and continue to fail at meeting their necessary standards, they shut down and develop a mindset that it is impossible to learn mathematics or that they are not a mathematics person (Jacobson, 2008). No Child Left Behind has not only affected the students, but it has affected the schools and the districts. Schools, districts, and states need to find ways to decrease the emphasis on testing but still teach the necessary standards and keep scores high within the entire school district.

**Achievement Gap**

Achievement gaps between white students and their black and Hispanic peers, and between students from high and low-income families, remain a constant problem in the U.S. The existence of gender gaps has also been an area of concern throughout the nation. One of the explicit goals of the 2001 No Child Left Behind (NCLB) law was to narrow these gaps. While there is some evidence that NCLB produced modest increases in average levels of academic achievement, as measured by NAEP, it is less clear whether NCLB has narrowed achievement gaps. Over the last two decades, most scholarship has relied on the National Assessment of Educational Progress (NAEP). NAEP comes in two forms: a long-term trend assessment (NAEPLTT), administered roughly every four years to 9-, 13-, and 17-year-old students, and a “Main NAEP,” taken by fourth- and eighth-graders every two years and twelfth-graders roughly every three years. Both NAEP-LTT and Main NAEP find that mathematics and reading gaps between white and black students have narrowed over the last forty years (Reardon, 2012). Hispanic-white gaps in the NAEP-LTT grew in the mid-1990s and have been closing since then (Reardon, 2012). There is a great deal of imprecision in NAEP estimates, however, due to their modest sample sizes and relatively infrequent data collection. Moreover, although NAEP provides state-specific gap estimates, NAEP scores are even more imprecise
due to small within-state samples. As an alternative to NAEP, state accountability data, collected in accordance with NCLB, can be used to estimate state-specific achievement gaps. Because state tests are administered to virtually all students in grades 3-8 and 10 each year, they provide a much richer source of information for investigating trends in achievement gaps.

Chudowsky, Chudowsky, and Kober (2007) reported key findings through their research on student achievement and gaps through alternative instate testing. They found that among the states with sufficient data to discern trends by subgroup, the number of states in which gaps in percentages proficient have narrowed since 2002. This far exceeds the number of states in which gaps have widened. Also, for the African-American subgroup, 14 of the 38 states with the necessary data showed evidence that gaps have narrowed in reading across all three grade spans analyzed (4th, 8th, and 10th), while no state had evidence that gaps have widened. In mathematics, 12 states showed these gaps narrowing, while only one state showed the gaps widening. Results were similar for the Hispanic and low-income subgroups. At first glance it appears that the effect of NCLB has had a positive impact on reaching its goal of closing the achievement gap. But out of all 50 states, only 14 showed evidence that gaps narrowed in reading and even less than that 12 for the area of mathematics. Chudowsky, Chudowdky, and Kober concluded that, as with the percentage proficient, the states in which the effect size gaps have narrowed outnumbered the states in which the effect size gaps have widened. However, for states with both types of data, there were a number of instances where gap closings in terms of percentages proficient were not confirmed by effect size. Effect sizes seem to give a less rosy picture of achievement gap trends. Even for subgroups that showed evidence of gaps narrowing, the gaps in percentages proficient were often sizeable, suggesting that it will take a concerted, long-term effort to close them.
For years males and females have been compared in numerous cognitive and developmental stages in life. Gender performance in schooling has become a large comparison since NCLB has been enacted. Authors, Doris R. Entwisle, Linda S. Olson and Karl L. Alexander (1994), all colleagues at John Hopkins University looked specifically at a gender gap that still remains in the secondary school. According to their research, a gender gap still remains in secondary schools, which favors males who have higher level of mathematics skills. Entwisle, Olson, and Alexander concluded that the gap exist because of the nature of males and females. As young children, males tend to want to be outside playing while females stay in a play with dolls. Since males are outside they tend to be less supervised than are females so males tend to discover things on their own. Boys also tend to play recreational sports earlier than girls and that exposure to sports tend to develop certain cognitive thinking skills.

The background and lifestyle of a student tends to play a role in the success or failure of a student in mathematics. Entwisle, Olson, & Alexander (1994) argues that males are exposed to things earlier in life which caused them to think very differently than females. This may be the reason for the gender gap in higher-level mathematics skills.

**Unrealistic Expectations**

The unrealistic expectation that all schools will meet 100% proficiency in mathematics and reading by 2014 had schools scrambling to push students through when in reality the effects of NCLB were minimal to none in regards to student achievement. In Ravitch’s (2009) research, which followed seven years after NCLB was enacted, long-term trends showed the achievement gap between white and minority students had hardly budged over the past decade. Although average scores are up for 9-year-olds and 13-year-olds in reading and mathematics between 2004 and 2008, the rate of improvement is actually smaller than it was in the previous
period measured, from 1999 to 2004. Results from this multibillion-dollar undertaking of NCLB were disappointing. Gains in achievement were meager, as was seen not only on NAEP’s long-term trend report, but also on the NAEP tests that are administered every other year and alternate state testing as well. In national assessments since the No Child Left Behind legislation was passed, 4th grade reading scores went up by 3 points, about the same as in the years preceding the law's enactment. In 8th grade reading, there have been no gains since 1998. In mathematics, the gains were larger before NCLB in both 4th grade and 8th grade (Ravitch, 2009).

Ravitch’s research also showed that the international assessment of mathematics and science, released in December 2009, that U.S. students scored well behind students in Hong Kong, Singapore, Japan, and Taipei. U.S. 4th grade and 8th grade students recorded small improvements in mathematics, but not in science, where both grades scored lower than in years predating No Child Left Behind. The decline of 8th grade test scores in science from 2003 to 2007 demonstrates the consequences of ignoring everything but reading and mathematics. Because NCLB counts only those basic skills, it has reduced attention to such non-tested subjects as science, history, civics, the arts, and geography.

**NCLB’s Impact on Students with Disabilities**

For many families with children in low-performing schools, or those who have children with special needs, the failure of our public schools to graduate every young person and prepare them for a career and livelihood comes as no surprise. Students with disabilities bear a particularly hard burden, as their rates of high school graduation, graduation with a diploma as opposed to a certificate of attendance, entry to postsecondary education and success in the labor
market are dramatically lower than rates for students without disabilities. According to the National Council on Disability (2004), more than 40 percent of secondary-aged students do not attain a high school diploma at the end of high school, and dropout rates for youth with disabilities are three to four times higher compared to dropout rates for youth without disabilities.

A key requirement of NCLB that has been praised by some but is the blunt of criticism from others is the calculation of Adequate Yearly Progress (AYP). According to the legislation, states must bring all students up to the “proficient” level on state tests by 2013-14, and individual schools must meet a measure of “Adequate Yearly Progress” targets in mathematics and reading or language arts with all student groups from one year to the next (Education Week, 2004). There are a number of disincentives for schools and states to meet these targets, but an issue with AYP is that all subgroups, including students with disabilities, must show progress. However, unlike other subgroups of students, such as those from racial or ethnic minorities, children receiving special education services, by definition, have disabilities that interfere with their learning. On average they perform at much lower levels on state tests, making it far more likely that schools with a special education subgroup will fail to make adequate progress (Olson, 2005).

With a carrot like the AYP dangling in front of schools and the states concerns about how students with disabilities, especially those with significant or multiple disabilities, can be included in the overall school count. The issue raised by some is that it is unfair to include students with significant cognitive disabilities in the calculation of AYP. Given that approximately one percent of all students (or 15 percent of students with disabilities) are considered severely disabled, the U.S. Department of Education offered an amendment to their
guidelines in December 2003 now known as the “one percent rule.” This rule allows school
districts to use alternative assessments, based on alternative standards, for up to one percent of
all students to report either “proficient” or “advanced” in order to meet AYP (No Child Left
Behind, 2004). States are free to define what students groups or subgroups make up this one
percent, but the policy is aimed at students with the most significant cognitive disabilities.
Those students that do not fall in the 1% rule are still required to take the state assessment and
are expected to be proficient even with the accommodations they received.

Positives that arose from NCLB with children with disabilities is that the majority of
students are now spending the majority if not all of their time in their general education
classroom. Congress and President Bush believed that to ensure that instruction and
achievement for students with disabilities is improved, all students with disabilities must be
assessed and the results of these assessments must be included in the data used to determine if a
school and school district make AYP. They also believed that if students with disabilities were
excluded from schools' accountability systems, they would be ignored and not receive the
academic attention that they deserved. By including students with disabilities in NCLB’s
accountability system, therefore, Congress made certain that schools would be held accountable
for the educational performance of these students (Savage, 2006).

Savage (2006) also explained that, in order for students with disabilities to be included
in NCLB’s requirements regarding statewide assessments and AYR, the requirements in NCLB
and the Individuals With Disabilities Education Improvement Act (IDEA) of 2004 (IDEA
2004) allow some students accommodations, modifications, or alternative assessments to get a
true picture of a student’s achievement. The assessment provisions of NCLB required that
school districts provided that students with disabilities be included in statewide-standardized
assessments and have access to appropriate accommodations needed to take the statewide assessment. If the standardized assessment were not appropriate for the student, even with accommodations, their progress was measured using an alternate assessment. The student’s Individual Education Plan (IEP) team or section 504 team made the decision regarding how the student participated in a statewide assessment (Savage, 2006). Note that, the team decided how a student participated, not whether the student participated.

Even with all the accommodations offered to students with disabilities they were still expected to meet the same standards without disabilities. This created a comparison that seemed impossible to ever meet.

The lack of teacher preparation

Ever since the Bush Administration enacted the No Child Left Behind Law in 2002, our nation’s focus on education has been student test results. The results of the state standardized test weighed heavily on teachers, the schools, and the districts they work in. According to Gentry (2008), poor results on these state tests are starting to be linked to the quality of the teacher delivering the content. The NCLB defines a “highly qualified teacher” as one that is fully licensed by the state and endorsed in the subject area with no licensure requirements waived on an emergency, temporary or provisional basis and who demonstrates competence in the content areas taught (Gentry, 2008). There are teachers within the school systems that were “highly qualified”, according to NCLB, but were unprepared to handle the “reality” of the classroom, more specifically initial educators whom entered the profession directly out of college. According to Smith and Power (2010), teacher preparation programs concentrate too much of their focus on content knowledge and not enough time on the core tasks or daily
aspects of teaching. Colleges and universities are spending too much attention on making sure future teachers know the material, but not enough on delivering the material.

Based on the 2001 data from the National Center for Education Statistics (NCES), nearly one third of all teachers in the USA leave the teaching field within their first three years of teaching and almost 50% may leave in the first five years of their teaching career (Gimbert, Cristol, & Sene, 2007). In research conduct by Yow (2009), first and second year teachers are leaving this profession, due not to their lack of content knowledge, but to their lack of “classroom” knowledge. Through Yow’s (2009) data collection using interviews of two mathematics teachers from different teaching preparation backgrounds, their conclusions about becoming a teacher were the same. “Knowing it and seeing it are two different things!” (pg. 5). Most of the problems or examples the two teachers referred to in these interviews with Yow had little to do with their mathematical knowledge and more to do with the everyday workings of a school. The everyday classroom experience is lacking in teacher education programs and there is an unrealistic expectation that all teachers should transition from college student to expert teacher as soon as they enter the classroom.

Teachers develop their practical knowledge through the experiences they gain in the classroom. In Ms. Yow’s interview (2009) with her two candidates, one rarely mentioned any connections she had made between her university-based coursework and what she was learning about classroom management or instruction while working in elementary classrooms during field placements. The more experiences a teacher can accumulate, the better prepared that teacher will become. However, our educational emphasis is still on content knowledge. According to Duncan (2010), “Most states routinely approve teacher education programs, and licensing exams typically measure basic skills and subject matter knowledge with paper-and-
pencil tests without real-world assessment of classroom readiness”. Initial or first year teachers know their content well but are not ready for the classroom, yet our nation classifies them as “high qualified”. “Highly content knowledgeable” would be a more appropriate phrase to use. It would appear that a good grasp of one’s subject area is a necessity but not a sole sufficient condition for effective teaching. In the end, Yow’s (2009) research suggests that what benefits a teacher the most is the experiences they gain in the classroom rather than the knowledge they learn through the content.

**Teacher preparation develops the knowledge and skills needed in the classroom**

Teachers need both the knowledge and operational skills of the classroom in order to become effective educators. Every teacher education program needs to provide this knowledge and skill in classroom operations in order to prepare future teachers for the classroom setting. Gentry (2008) points out that, “teacher education programs must prepare personnel capable of improving student learning. This means not only being effective with college classroom activities, but also expanding the preparation process through appropriate field-based clinical experience” (Gentry, 2008, pg. 3). Student teaching is simply not enough. Throughout a future educator’s college education he/she should be exposed to the classroom setting, not just the theory of it. The theoretical knowledge obtained in the classroom setting needs to come together with the skill-application of the field-based clinical experience (Gentry, 2008). Clinical experiences, which include student teaching, are a bridge between theory, knowledge, and skills gained within the classroom of the college or university. According to Yow (2009), these clinical experiences develop a teacher’s “withitness”. “Withitness” is described as good timing, targeting, monitoring, and reacting. The sooner a teacher is able to develop their “withitness” the more effective the teacher can be for their students.
Providing pre-service teachers with the opportunity in the field to learn the art and science of teaching is of utmost importance for teacher preparation programs (Yow, 2009). In many jobs outside of education there is always some type of “training” that is applied to help the newcomer to the business get associated with his/her new role. Student teaching is used in the education field as the “training” for prospective teachers. According to Boyd, Grossman, Lankford, Loeb, & Wyckoff, (2008), depending on the school, some field experience is required for one year and some for only half a year. Student teaching may be the first time a student has entered the classroom in the “role” of a teacher. Student teachers are gradually eased in to the workload of their mentor until they have the full workload, which may last a couple weeks before eased back out to end their field experience.. According to Yow (2009), this is not enough experience to make student teachers truly prepared. The more work in the classroom the student teacher can experience, the more effective they will become in their own teaching. First year teachers that were effective with their students experience came from a teacher preparation program that focuses more on the work of the classroom and not the content (Boyd, Grossman, Lankford, Loeb, & Wyckoff, 2008). In turn, the more the teacher can experience from the classroom setting, the more knowledge and skills they will acquire.

Building the skills and knowledge cannot just come from being student teacher. The student must have guidance to help develop these skills. A knowledgeable mentor is a source the student teacher can reach out to. Student teachers and mentors need to engage in conversations that make explicit the practical knowledge developed. Only with such focus can student teachers begin to understand and be prepared for the complexity of teaching (Perry & Power, 2004). When teachers are unprepared to handle the diversity of students they often end up blaming the students for their own lack of skills. According to Smith and Power (2010),
because of this importance of reaching every child “many teacher-preparation programs and pathways now focus their curriculum specifically on preparing teachers to meet the needs of these diverse learners” (Smith and Power pg. 8). Only through experience will teacher preparation programs build the knowledge and skills of students to classify them as “highly qualified”.

**Well-prepared teachers are more likely to remain in teaching**

No matter how many experiences a teacher collects, he/she cannot possibly collect enough for every teaching situation. However, the more experiences a teacher can collect and reflect on, the better prepared that teacher becomes for future situations. When unprepared teachers are placed in the “reality” of a classroom, it is too overwhelming and they are frightened out of the career. Field experiences are extremely important to pre-service teachers in order to gain insight and experience with the everyday classroom atmosphere. According to Duncan (2010), students who are interested in teaching have the opportunity to observe and participate in the classroom to decide if teaching is the appropriate career for them. Student teaching gives the pre-service teachers a chance to ask the question, “is this really for me?” before they are thrown into a classroom of their own. Well-prepared graduates are more likely to remain in teaching and contribute to the development of a strong professional learning community in the schools they serve. “Those who completed student teaching, acquired certification, and participated in induction were 111% more likely to stay in teaching than those who had no training” (Yow, 2009). There is no reality-shock for teachers who are prepared. They have answered the question, “Am I up to this challenge?” They have weighed options and considered the gulf between profession ideals and the daily grind of classroom life, the fragmentation of tasks, the oscillation between intimacy and distance with one’s pupils, and the
apparent inadequacy of instructional materials give the diversity of pupil characteristics (Yow, 2009).

**Well-prepared teachers produce higher student achievement**

When well-prepared teachers enter their first year of teaching they can focus on their students’ success rather than behavioral problems. According to Boyd, Grossman, Lankford, Loeb, and Wyckoff (2008), “teachers who have had the opportunity in their preparation to engage in the actual practices involved in teaching show greater student gains during their first year of teaching.” Well-prepared teachers can focus on how to improve the lessons or how to engage their students in the material being taught to them. By teachers being prepared and engaging their students, students have a deeper understanding of the materials and meet higher expectations. One teacher’s personal reflection from her field experience reflects just that. She stated that her field experiences working with struggling students changed the way she thought about them; she grew to want to help them and saw that they had that spark to learn and complete assignments and she really enjoyed working with them (Yow, 2009). Teachers are exposed to so much more in a field experience than they are in a lecture classroom learning the theory of how children learn. The more student teachers are exposed to the students that need help, the more these student teachers learn what works and what does not. The more unprepared a teacher is, the less likely his/her students will achieve learning success. Teacher preparation programs that are rich in field experiences help develop perhaps the most important outcome of teacher education- the teacher.

Many inner-city schools or low-income urban schools have students that struggle to meet the requirements of the state standardized tests; however, the students are not to be blamed for
these scores. Duncan (2010) suggests that when looking at low scores we should be looking at teachers. “Studies repeatedly document that the single biggest influence on student academic growth is the quality of the teacher--- not socioeconomic status, not family background, but the quality of the teacher” (Duncan pg. 16). The teachers are the number one influence on a student’s academic success. Effective characteristics in teachers promote achievement, positive attitudes, motivation, and learning in students (Gentry, 2008). However, in schools where “highly-qualified” and well-prepared teachers are needed the most, this seems to be absent. According to Smith and Power (2010), “The argument here is that schools with large numbers of poor and minority students are most likely to have teachers who are inexperienced, teaching in areas outside their fields, or otherwise unqualified. Thus, the teacher-quality gap exacerbates the achievement gap (Smith and Power pg. 8).” Another reason that some students are not being exposed to quality teaching in key academic areas was made by Gimbert, Cristol, and Sene, “Specifically, the lack of qualified teachers in the field of mathematics and science seriously impacted the instruction that students received in these academic areas and undermined the future earning potential of the students not receiving their instruction from a qualified teacher” (Gimbert, Cristol, and Sene, 2007, pg. 246). The importance of making sure teachers are prepared for the “reality” of the classroom and are qualified in their fields not only affects the teachers themselves, but the students that are trusting them to provide their students a better education.

**Drawbacks for Teachers**

Since NCLB was enacted, the pressure to raise test proficiency has increased and American teachers today work harder under much more challenging conditions than teachers elsewhere in the world. They also receive less-useful feedback, receive less-helpful
professional development, and have less time to collaborate to improve their work. Not surprisingly, two-thirds believe their profession is not valued by society—an indicator that the Organization for Economic Cooperation and Development (OECD) finds is ultimately related to student achievement (Darling-Hammond, 2015). The achievement gap prior to the enactment of NCLB was difficult to close with the multiple responsibilities of educators, but now with even more pressure and less time for teachers to plan high-quality lessons, it is no wonder the gap is slow to close. Darling-Hammond’s (2015) found that nearly two-thirds of U.S. middle school teachers work in schools where more than 30 percent of students are economically disadvantaged. This is the highest rate in the world. The next countries in line after the United States are Malaysia and Chile. Ignored by our current education policies are the facts that nearly one in four American children lives below the poverty line and a growing number are homeless, without regular access to food or healthcare, and stressed by violence and drug abuse around them. Educators now spend a great deal of their time trying to help children and their families manage these issues, while they also seek to close skill gaps and promote learning.

Along with these challenges, U.S. teachers must cope with larger class sizes with an average of 27 students per class versus the international average of 24. Hammond-Darling also reports that American teachers spent many more hours than teachers in any other country directly instructing children each week, 27 hours versus 19 hours. American teachers work more hours in total each week than their global counterparts, 45 hours per week versus 38 hours, with less time in their schedules for planning, collaboration, and professional development. This unrealistic and overbearing schedule makes it harder for educators to find time to work with their colleagues on creating great curriculum and learning new methods, to
grade papers, to work individually with students, and to reach out to parents. Without these essential pieces, closing the achievement gap completely seems almost impossible.

**Chapter Summary:**

Since its enactment in 2002, No Child Left Behind has been debated as to its success prior to or associated with NCLB. The research on NCLB revealed both positive and negative impacts on school systems and students. Revising how teachers are prepared for the classroom has and continues to be a serious topic for research. With the demand of high-stakes testing as an indicator of progress, schools and teachers have began focusing more on test preparation than developing quality curriculum and classroom teaching. Although gains have been made in subgroups, achievement gaps continue. Students with disabilities have benefitted from the legislation by making schools more accountable for their education. However scores for all may be skewed depending on the number of special education students in the school as all but 1% of the students are measured by the same metric.
Chapter 3
Methodology

Background

This study investigated the impact of No Child Left Behind (NCLB) on student achievement for the state of Wisconsin and one of its largest urban school districts in the state. For this study the researcher gathered data from the Department of Public Instruction of Wisconsin database. The Department of Public Instruction, or DPI, has testing results that date back to the 1997-98 school year through the 2013-14 school year. The 2013-14 school year is the last recorded year that Wisconsin public schools took the WKCE assessment before switching to Common Core State Standards. DPI not only has results for the entire state of Wisconsin but each school district and each school within the district. The information that was gathered for analysis in this study dates back to the 1998-99 school year through the 2013-14 school year.

Sample

The researcher analyzed the 4th, 8th, and 10th grade Wisconsin Knowledge and Concepts Examination (WKCE) results for both the state level and the large urban school district. The data used was public information. A thesis proposal was submitted and accepted by the Carthage College Institutional Review Board. The data used in this study to analyze the impact of NCLB was broken up into six different sub groups. These groups are listed below:

Group 1: The first group analyzed in this study consisted of every 4th grader that attended a public school in the state of Wisconsin for seventeen years (1997-98 – 2013-14).

Group 2: The second group analyzed in this study consisted of every 8th grader that attended a public school in the state of Wisconsin for seventeen years (1997-98 – 2013-14).
Group 3: The third group analyzed in this study consisted of every 10th grader that attended a public school in the state of Wisconsin for seventeen years (1997-98 – 2013-14).

Group 4: The fourth group analyzed in this study consisted of every 4th grader that attended a public school in the large urban district studied for seventeen years (1997-98 – 2013-14).

Group 5: The fifth group analyzed in this study consisted of every 8th grader that attended a public school in the large urban district studied for seventeen years (1997-98 – 2013-14).

Group 6: The sixth group analyzed in this study consisted of every 10th grader that attended a public school in the large urban district studied for seventeen years (1997-98 – 2013-14).

Instrumentation

The data collection instrument that was used in this study was the Wisconsin Knowledge and Concepts Examination results from 1997-98 through 2013-14 school years. Since 1997-98 states across the nation were not required to report their testing information publicly but since then states are now required to post their information on their Department of Public Instruction website. The researcher was able to find this information and print off this information to use in this study.

Analysis Procedures

In order to collect data for this study the researcher used the internet to access Wisconsin’s DPI website and download the state and district mathematics data for 4th, 8th, and
$10^{th}$ grade students. The researcher went online to the Wisconsin Department of Public Instruction website, under the student assessment database known as WINSS, and looked up test results for the state of Wisconsin since the 1997-98 school year. Furthermore, the researcher narrowed the search and found information specifically dealing with a large urban district for those same years. This data results came from the WKCE, which is the test that was given throughout the state of Wisconsin. This test is given in the $4^{th}$, $8^{th}$, and $10^{th}$ grades in all core subjects. In this study, mathematics is the only subject studied.

The data collected breaks the information down into the number of students and what percent met the minimal, basic, proficient, or advanced standard on this test. In this case, the researcher only looked at the percentage of students who were at the proficient or advanced level because this is where NCLB indicates students need to be. Once these percentages were found, the researcher put them into different tables in order to run a series of $t$-statistical tests to determine if the relationship was significant at a .05 level of significance. The analysis results were presented in tables, which were separated into the following five categories. These included:

- A comparison of Wisconsin’s first year to its last
- A comparison of the urban district’s first year performance to its last
- A comparison of Wisconsin’s nth year score to the n+1 score
- A comparison of the urban school’s nth year score to the n+1 score
- A comparison of Wisconsin’s yearly scores to the urban district’s yearly scores.

Once the tables were created, a $t$-test was conducted to determine whether the scores were significant or not at a significance level of .05. The data was analyzed using a one-tailed test since the hypotheses were written to find a directional comparison between the 1997-98 school
year and 2013-14 school year. This same procedure was used for the specific areas of gender, ethnicity, and disability in order to find these t-statistical comparisons. For the specific areas, the students of the urban district were not compared against the students of Wisconsin because that has already been assessed. The specific areas analyzed only the performance between consecutive school years’, gender, ethnicity, and disability. The next chapter presents the researcher’s findings.

Chapter Summary

This chapter described the methodology used in this quantitative study conducted to determine if No Child Left Behind had any impact on student performance in mathematics. Data was taken from the Wisconsin Department of Education student assessment database known as WINSS. The researcher gathered student assessment results in mathematics from grade levels 4, 8, and 10 for both the state of Wisconsin and one of its large urban school districts. The data that was collected dated back to the 1997-98 school year through the 2013-14 school year. The researcher conducted a one-tailed t-statistical tests assuming equal variances at a .05 significance to assess the impact of NCLB on student achievement.
Chapter 4

Results

Purpose of the Study

The purpose of this research study was to determine the effect of No Child Left Behind (NCLB) on student achievement. Student assessment data was collected through the Wisconsin Department of Education database WINSS and analyzed using a one-tailed \( t \)-test at a .05 significance level. The data analysis was organized into subgroups in order to answer the researcher’s guiding questions. These questions were as follows:

- Will a metropolitan urban school district perform at the same academic level compared to the state it is located in for the area of mathematics?
- Does a gender gap still exist or is it non-existent?
- Are all students performing at the same academic standards?
- Has No Child Left Behind significantly impacted disabled students academic performance compared to their nondisabled peers?

Below are the results from the data analysis:

Wisconsin versus Studied District

Research Question 1: Will a metropolitan urban school district perform at the same academic level compared to the state it is located in for the area of mathematics?

To answer this question the researcher investigated the performance of the state of Wisconsin over seventeen consecutive years as well as the large urban school district in Wisconsin to determine if there was a significant impact from NCLB on student growth in
grades 4th, 8th, and 10th over time. Specifically, the researcher compared the results of the urban school district to the state of Wisconsin to investigate if performances in mathematics are equivalent in grade levels 4th, 8th, and 10th.

The two hypotheses below compared the significance between the beginning year scores to the ending year scores for both the state of Wisconsin and the urban district in Wisconsin.

Null Hypothesis 1: The mean beginning year scores of Wisconsin will be greater than or equal to the mean ending year scores of Wisconsin.

Alternative Hypothesis 1: The mean beginning year scores of Wisconsin will be less than the mean ending scores of Wisconsin.

Null Hypothesis 2: The mean beginning year scores of the urban district will be greater than or equal to the mean ending year scores of the district.

Alternative Hypothesis 2: The mean beginning year scores of the urban district will be less than the mean ending scores of district.

Tables 1-3 on the next page show the graphical trend of proficient and advanced scores for both the state of Wisconsin and the urban district in Wisconsin for grades 4, 8, and 10. Results from Tables 1-3 on the next page show that there was no significant change in proficient and advanced students from the beginning year scores to the ending year scores for both the state of Wisconsin and the urban school district.
Table 1

4th grade Wisconsin and Urban District

See Appendix A for details.

Table 2

8th Grade Wisconsin and Urban District

See Appendix A for details.
Table 3

10th Grade Wisconsin and Urban District

See Appendix A for details.

Testing Consecutive Years

The two hypotheses below investigated the significance in scores over consecutive school years for both the state of Wisconsin and the urban district in Wisconsin. In order to reject the null hypothesis for each analysis, a $t$ score of less than -1.77093 was required. The $t$-test was a one-tail test since the research hypotheses were directional.

Null Hypothesis 3: The mean n-year scores of Wisconsin will be greater than or equal to the mean (n+1)-year scores of Wisconsin.

Alternative Hypothesis 3: The mean n-year scores of Wisconsin will be less than the mean (n+1)-year scores of Wisconsin.

Null Hypothesis 4: The mean n-year scores of the urban district will be greater than or equal to the mean (n+1)-year scores of the district.
Alternative Hypothesis 4: The mean n-year scores of the urban district will be less than the mean (n+1)-year scores of the district.

Table 4 below shows the breakdown of $t$-stats computed for Hypotheses 3 and 4 and the decision to accept or reject the null hypotheses.

Table 4

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>$t$-critical one tail</th>
<th>$t$ statistic</th>
<th>p value</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis 3-WI (4th grade)</td>
<td>-1.77093</td>
<td>0.58187</td>
<td>0.2853</td>
<td>Accept Null Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 3-WI (8th grade)</td>
<td>-1.77093</td>
<td>-0.08168</td>
<td>0.46807</td>
<td>Accept Null Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 3-WI (10th grade)</td>
<td>-1.77093</td>
<td>-0.14746</td>
<td>0.44252</td>
<td>Accept Null Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 4-urban (4th grade)</td>
<td>-1.77093</td>
<td>-0.8802</td>
<td>0.19737</td>
<td>Accept Null Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 4-urban (8th grade)</td>
<td>-1.77093</td>
<td>-0.0195</td>
<td>0.49237</td>
<td>Accept Null Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 4-urban (10th grade)</td>
<td>-1.77093</td>
<td>-0.29819</td>
<td>0.38514</td>
<td>Accept Null Hypothesis</td>
</tr>
</tbody>
</table>

See Appendices B through M for more detail.

None of the $t$-tests had a score that fell into the rejection range as shown above in Table 4. This resulted in the acceptance of null hypotheses 3 and 4 investigated for both the state of Wisconsin and the urban district. This means there was no significant change in mathematics scores over consecutive testing years for both the state of Wisconsin and the urban district investigated.

Urban District Compared to State

The next hypothesis investigated the significance in scores of the urban district compared to the state of Wisconsin. In order to reject the null hypothesis, a $t$ score of less than
-1.7613\,1 was required. The \( t \)-test was a one-tail test since the research hypothesis was directional.

Null Hypothesis 5: The mean year scores of the urban district will be greater than or equal to the mean year scores of Wisconsin.

Alternative Hypothesis 5: The mean year scores of the urban district will be less than the mean year scores of Wisconsin.

Table 5 below shows the breakdown of \( t \)-stats computed for Hypothesis 5 and the decision to accept or reject the null hypotheses.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>( t )-critical one tail</th>
<th>( t ) statistic</th>
<th>( p ) value</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis 5 (4\textsuperscript{th} grade)</td>
<td>-1.7613,1</td>
<td>-3.94447</td>
<td>0.00073</td>
<td>Accept Research Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 5 (8\textsuperscript{th} grade)</td>
<td>-1.7613,1</td>
<td>-5.00203</td>
<td>0.0001</td>
<td>Accept Research Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 5 (10\textsuperscript{th} grade)</td>
<td>-1.7613,1</td>
<td>-14.46637</td>
<td>4.11E-10</td>
<td>Accept Research Hypothesis</td>
</tr>
</tbody>
</table>

See Appendices B through M for more detail.

All of the \( t \)-tests had a score that fell into the rejection range as shown above in Table 5. This resulted in the rejection of null hypothesis 5. This means that the urban district investigated performed significantly less than the state of Wisconsin in all three grade levels for mathematics.
**Gender Gaps**

Research Question 2: Does a gender gap still exist or is it non-existent in mathematics?

To answer this question the researcher investigated the performance of the state of Wisconsin over seventeen consecutive years as well as the large urban school district in Wisconsin to determine if there was a significant impact from NCLB on student growth in grades 4th, 8th, and 10th over time. Specifically, the researcher compared the results of males and females in the urban school district and the state of Wisconsin to investigate if a gender gap exist in mathematics for grade levels 4th, 8th, and 10th.

Hypotheses 6 and 7 below investigated the significance in scores between males and females for both the state of Wisconsin and the urban district in Wisconsin. In order to reject the null hypotheses, a t score of less than -1.76131 was required. The t-test was a one-tail test since the research hypotheses were directional.

Null Hypothesis 6: The mean scores of females in Wisconsin will be greater than or equal to the mean scores of males in Wisconsin.

Alternative Hypothesis 6: The mean scores of females in Wisconsin will be less than the mean scores of males in Wisconsin.

Null Hypothesis 7: The mean scores of females in the urban district will be greater than or equal to the mean scores of males in the district.

Alternative hypothesis 7: The mean scores of females in the urban district will be less than the mean scores of males in the district.

Table 6 on the following page shows the breakdown of t-statistics computed for Hypotheses 6 and 7 and the decision to accept or reject the two null hypotheses studied.
Table 6

\[ t \]-stats Breakdown Comparing Males and Females

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>(-t)-critical one tail</th>
<th>(t) statistic</th>
<th>(p) value</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis 6-WI (4(^{th}) grade)</td>
<td>-1.76131</td>
<td>-3.08931</td>
<td>0.004</td>
<td>Accept Research Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 6-WI (8(^{th}) grade)</td>
<td>-1.76131</td>
<td>-2.44949</td>
<td>0.01404</td>
<td>Accept Research Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 6-WI (10(^{th}) grade)</td>
<td>-1.76131</td>
<td>-3.24037</td>
<td>0.00296</td>
<td>Accept Research Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 7-urban (4(^{th}) grade)</td>
<td>-1.76131</td>
<td>-1.65396</td>
<td>0.06019</td>
<td>Accept Null Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 7-urban (8(^{th}) grade)</td>
<td>-1.76131</td>
<td>-1.30876</td>
<td>0.10585</td>
<td>Accept Null Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 7-urban (10(^{th}) grade)</td>
<td>-1.76131</td>
<td>-3.48607</td>
<td>0.00182</td>
<td>Accept Research Hypothesis</td>
</tr>
</tbody>
</table>

See Appendices N through Z for more detail.

All but two of the \(t\)-tests had a score that fell into the rejection range as shown above in Table 6. This resulted in the rejection of null hypothesis 6 investigated for all three grade levels and null hypothesis 7 investigated for grade 10. The researcher also accepted null hypothesis 7 investigated for grade levels 4 and 8 in the urban school district. This means a significant gender gap exists in the state of Wisconsin in the three grade levels analyzed, however a significant gender gap exist only in grade 10 in the urban district investigated.

\[ \text{Comparison Between Ethnicities} \]

Research Question 3: Are all students performing at the same academic standards?

To answer this question the researcher investigated the performance of the state of Wisconsin over seventeen consecutive years as well as the large urban school district in Wisconsin to determine if there was a significant impact from NCLB on student growth in grades 4\(^{th}\), 8\(^{th}\), and 10\(^{th}\) over time. Specifically, the researcher compared the results of white,
black, and Hispanic performance in the urban school district and the state of Wisconsin to investigate if all students are performing at the same academic standards in mathematics for grade levels 4th, 8th, and 10th.

The six hypotheses below investigated the significance in scores between different ethnicities, specifically, white, black, and Hispanic for both the state of Wisconsin and the urban district in Wisconsin. In order to reject the null hypotheses, a t score of less than -1.76131 was required. The t-test was a one-tail test since the research hypotheses were directional.

Null Hypothesis 8: The mean scores of white students in Wisconsin will be greater than or equal to the mean scores of black students in Wisconsin.

Alternative Hypothesis 8: The mean scores of white students in Wisconsin will be less than the mean scores of black students in Wisconsin.

Null Hypothesis 9: The mean scores of white students in Wisconsin will be greater than or equal to the mean scores of Hispanic students in Wisconsin.

Alternative Hypothesis 9: The mean scores of white students in Wisconsin will be less than the mean scores of Hispanic students in Wisconsin.

Null Hypothesis 10: The mean scores of black students in Wisconsin will be greater than or equal to the mean scores of Hispanic students in Wisconsin.

Alternative Hypothesis 10: The mean scores of black students in Wisconsin will be less than the mean scores of Hispanic students in Wisconsin.

Null Hypothesis 11: The mean scores of white students in the urban district will be greater than or equal to the mean scores of black students in the district.
Alternative Hypothesis 11: The mean scores of white students in the urban district will
be less than the mean scores of black students in the district.

Null Hypothesis 12: The mean scores of white students in the urban district will be
greater than or equal to the mean scores of Hispanic students in the district.

Alternative Hypothesis 12: The mean scores of white students in the urban district will
be less than the mean scores of Hispanic students in district.

Null Hypothesis 13: The mean scores of black students in the urban district will be
greater than or equal to the mean scores of Hispanic students in the district.

Alternative Hypothesis 13: stated that the mean scores of black students in the urban
district will less than the mean scores of Hispanic students in the district.

Table 7 on the following page shows the breakdown of the $t$-statistics computed for
hypotheses 8 through 13 and the decision to accept or reject each null hypothesis.
Table 7

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>$t$-critical one tail</th>
<th>$t$ statistic</th>
<th>$p$ value</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis 8-WI (4th grade)</td>
<td>-1.76131</td>
<td>63.51241</td>
<td>0</td>
<td>Accept Null Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 8-WI (8th grade)</td>
<td>-1.76131</td>
<td>24.31791</td>
<td>0</td>
<td>Accept Null Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 8-WI (10th grade)</td>
<td>-1.77093</td>
<td>27.27748</td>
<td>0</td>
<td>Accept Null Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 9-WI (4th grade)</td>
<td>-1.76131</td>
<td>32.93182</td>
<td>0</td>
<td>Accept Null Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 9-WI (8th grade)</td>
<td>-1.76131</td>
<td>22.87764</td>
<td>0</td>
<td>Accept Null Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 9-WI (10th grade)</td>
<td>-1.76131</td>
<td>40.39047</td>
<td>0</td>
<td>Accept Null Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 10-WI (4th grade)</td>
<td>-1.76131</td>
<td>-15.44202</td>
<td>1.73E-10</td>
<td>Accept Research Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 10-WI (8th grade)</td>
<td>-1.76131</td>
<td>-8.58426</td>
<td>2.98E-7</td>
<td>Accept Research Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 10-WI (10th grade)</td>
<td>-1.76131</td>
<td>-11.19391</td>
<td>1.14E-8</td>
<td>Accept Research Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 11-Urban (4th grade)</td>
<td>-1.76131</td>
<td>30.42432</td>
<td>0</td>
<td>Accept Null Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 11-Urban (8th grade)</td>
<td>-1.76131</td>
<td>32.62009</td>
<td>0</td>
<td>Accept Null Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 11-Urban (10th grade)</td>
<td>-1.76131</td>
<td>19.81866</td>
<td>6.08E-12</td>
<td>Accept Null Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 12-Urban (4th grade)</td>
<td>-1.76131</td>
<td>17.22589</td>
<td>4.03E-11</td>
<td>Accept Null Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 12-Urban (8th grade)</td>
<td>-1.76131</td>
<td>22.92728</td>
<td>0</td>
<td>Accept Null Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 12-Urban (10th grade)</td>
<td>-1.76131</td>
<td>28.95494</td>
<td>0</td>
<td>Accept Null Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 13-Urban (4th grade)</td>
<td>-1.76131</td>
<td>-8.94101</td>
<td>1.83E-7</td>
<td>Accept Research Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 13-Urban (8th grade)</td>
<td>-1.76131</td>
<td>-5.3991</td>
<td>0.00005</td>
<td>Accept Research Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 13-Urban (10th grade)</td>
<td>-1.76131</td>
<td>-5.44424</td>
<td>0.00004</td>
<td>Accept Research Hypothesis</td>
</tr>
</tbody>
</table>

See Appendices AA through AY for more details.
A third of the t-tests had a score that fell into the rejection range as shown above by Table 7. This resulted in the acceptance of null hypotheses 8, 9, 11, and 12 investigated for all grade levels in both the state of Wisconsin and the urban district. However, the researcher rejected null hypotheses 10 and 13 investigated for all grade levels for both the state of Wisconsin and the urban district. This means white students performed significantly higher than their black and Hispanic peers for both the state of Wisconsin and the urban district while Hispanic students performed significantly higher than their black peers in both the state of Wisconsin and the urban district.

**Disabled versus Non-Disabled Performance**

Research Question 4: Has NCLB significantly impacted disabled students academic performance compared to their non-disabled peers?

To answer this question the researcher investigated the performance of the state of Wisconsin over seventeen consecutive years as well as the large urban school district in Wisconsin to see if there was a significant impact from NCLB on student growth in grades 4th, 8th, and 10th over time. Specifically, the researcher compared the results of disabled and non-disabled performance in the urban school district and the state of Wisconsin to determine if NCLB impacted disabled students academic performance in mathematics for grade levels 4th, 8th, and 10th.

The two hypotheses below investigated the significance in scores between disabled and non-disabled students for both the state of Wisconsin and the urban district in Wisconsin. In order to reject the null hypotheses, a t score of less than -1.76131 was required. The t-test used was a one-tail test since the research hypotheses were directional.
Null Hypothesis 14: The mean scores of disabled students in Wisconsin will be greater than or equal to the mean scores of non-disabled students in Wisconsin.

Alternative Hypothesis 14: The mean scores of disabled students in Wisconsin will be less than the mean scores of non-disabled students in Wisconsin.

Null Hypothesis 15: The mean scores of disabled students in the urban district will be greater than or equal to the mean scores of non-disabled students in the district.

Alternative Hypothesis 15: The mean scores of disabled students in the urban district will be less than the mean scores of non-disabled students in the district.

Table 8 below shows the breakdown of $t$-statistics computed for Hypotheses 14 and 15 and the decision to accept or reject the null hypotheses.

**Table 8**

$t$-stats Breakdown Comparing Disabled and Non-Disabled Students

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>$t$-critical one tail</th>
<th>$t$ statistic</th>
<th>p value</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis 14-WI (4\textsuperscript{th} grade)</td>
<td>-1.76131</td>
<td>-31.76965</td>
<td>0</td>
<td>Accept Research Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 14-WI (8\textsuperscript{th} grade)</td>
<td>-1.76131</td>
<td>-23.17356</td>
<td>0</td>
<td>Accept Research Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 14-WI (10\textsuperscript{th} grade)</td>
<td>-1.76131</td>
<td>-25.01418</td>
<td>0</td>
<td>Accept Research Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 15-urban (4\textsuperscript{th} grade)</td>
<td>-1.76131</td>
<td>-23.5767</td>
<td>0</td>
<td>Accept Research Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 15-urban (8\textsuperscript{th} grade)</td>
<td>-1.76131</td>
<td>-17.44009</td>
<td>3.41E-11</td>
<td>Accept Research Hypothesis</td>
</tr>
<tr>
<td>Hypothesis 15-urban (10\textsuperscript{th} grade)</td>
<td>-1.76131</td>
<td>-11.48013</td>
<td>8.24E-9</td>
<td>Accept Research Hypothesis</td>
</tr>
</tbody>
</table>

See Appendices AZ through BL for more detail.

All of the $t$-tests had a score that fell into the rejection range as shown above by Table 8. This resulted in the rejection of null hypotheses 14 and 15 investigated for grade levels 4, 8, and 10 in both the state of Wisconsin and the urban district. This means that disabled students
performed significantly lower than their non-disabled peers in all three grade levels investigated in the state of Wisconsin and the urban district.

Chapter Summary

The researcher conducted 39 t-tests assuming equal variance for 12 of the 13 hypotheses presented in this study to determine if No Child Left Behind (NCLB) had an impact on student achievement in the area of mathematics in the state of Wisconsin and a large urban district in Wisconsin. The data was statistically analyzed through one-tailed t-tests, and the t statistical values were significantly lower than the t-critical value in 6 \( \frac{1}{3} \) out of the 12 hypotheses. Based on this evidence, the researcher rejected 19 of the 39 null hypotheses investigated. The results indicated that NCLB had little to no impact on student achievement in mathematics in the state of Wisconsin or the urban district studied in Wisconsin.
Chapter 5
Discussion, Limitations, and Recommendations

Overview

This study investigated the impact of No Child Left Behind (NCLB) on student achievement in mathematics in the state of Wisconsin and in a large Wisconsin urban school district. Student achievement data for the state of Wisconsin and a large urban school district in the state of Wisconsin was taken from the Wisconsin Knowledge and Concepts Examination (WKCE) and analyzed by the researcher. After analyzing each hypothesis it was informative to find the results from this data analysis. Of the 39 hypotheses tested, 19 of the null hypotheses were rejected resulting in the acceptance of the researcher’s alternative hypotheses.

Discussion

Impact on Advanced Students

The first set of hypotheses compared the entire population of students in Wisconsin compared to those of an urban school district, all of which involved accepting the null hypotheses. When looking at the line graphs of both Wisconsin and the urban school district for proficient and advanced scores the trends barely increased after NCLB was enacted into law in 2002 (See Tables 1, 2, and 3 in Chapter 4). There seemed to be a significant drop in advanced students for both the state and the urban school district in the 2007-08 school year, however those classified as proficient did not show much difference. The researcher noted that there seemed to be a large impact on the advanced student’s scores when the state standard cut scores were raised to prepare for the rigor of the Common Core State Standards in 2014. The percentage of advanced and proficient students in 4th grade for both the state of Wisconsin and the urban school district tended to trend around the upper 40th percentile. This same pattern
exists for 8th grade students but the percentile for advanced and proficient students dropped slightly to the mid to lower 40th percentile and the 10th grade students shared a similar pattern dropping even more to the upper 30th percentile (See Appendices B, F, and J). This means that in the state of Wisconsin, less students were performing at the proficient and advanced levels as their mathematics education progressed.

Comparing beginning to end scores was not enough to state that the NCLB legislation was not successful so the researcher investigated consecutive years of test scores to observe if year to year there had been any significant impact. To determine if a significant impact between year to year comparisons existed, the researcher conducted a one-tailed t-test with .05 significance and accepted the researched hypotheses if the t-statistic fell below a critical value of -1.77. All three grade levels in both the state of Wisconsin and the urban school district resulted in accepting the researcher’s null hypotheses since each t-stat fell above the critical value (See Appendices D, E, H, I, L, and M). Accepting the null hypotheses for each grade meant that there were no significant changes in student’s performance from year to year for both the state of Wisconsin and the urban school district. Based on these results, the researcher determined the NCLB legislation had no significant impact on mathematics performance on the WKCE over the seventeen year period for the state of Wisconsin and the urban school district studied.

Gender Comparisons show Gender Gap

The second set of hypotheses investigated gender comparison and the results were not expected. To determine if a significant gap existed the researcher conducted a one-tailed t-test with .05 significance and accepted the researched hypotheses if the t-statistic fell below a
critical value of -1.76. Hypothesis 6 investigated the gender comparison in the entire state of Wisconsin and all grade levels 4, 8, and 10 data analysis allowed the investigator to reject the null hypothesis since the \( t \)-statistic values were significantly lower than the \( t \) critical value. This indicated that there is an achievement gap in mathematics between male and female students. Females performed significantly less than males in all three grade levels investigated (See Appendices R, S, U, V, X, and Y). Hypothesis 7 investigated the gender comparison in the urban district in Wisconsin and only grade level 10 data analysis results allowed the investigator to reject the null hypothesis since the \( t \)-statistic value was significantly lower than the \( t \) critical value. This indicated that there is an achievement gap in mathematics between male and female students at grade 10, but not at grades 4 and 8 within the urban district investigated. Females performed significantly less than males in grade 10, but in prior testing years females in grade 4 and 8 were not performing significantly less than males. The tests found the stereotype of males performing better in mathematics than females to be true at the state level and only true at grade 10 in the urban school district (See Appendices R, T, U, W, X, and Z). When looking at the line graphs of both male and female students for proficient and advanced scores the lines for males tended to run above the lines of females (See Appendices O, P, Q). Based on this analysis, the researcher determined that there was a significant gender gap between male and female students in the state of Wisconsin, but no gap was present in the urban district until grade 10.

**Ethnicity Comparisons Show White on Top Followed by Hispanic**

The third set of hypotheses investigated ethnicity comparisons. The researcher found that most of the results were similar to those found in the literature. To determine if a
significant gap existed the researcher conducted a one-tailed $t$-test with a .05 significance level and rejected the null hypotheses if the $t$-statistic fell below a critical value of -1.76.

Hypotheses 8, 9, 11, and 12 compared white students to their black and Hispanic peers. The results of the $t$-tests were expected. Each hypothesis stated above resulted in accepting the null hypotheses for all three grade levels in both the state of Wisconsin and the urban school district. These results indicate that white students performed significantly better than both their black and Hispanic peers at all three grade levels. However, the gaps between the ethnicity groups were far less in the urban district when compared to the state of Wisconsin and the gaps between white and Hispanic students were less than the gaps between white and black students (See Appendices AF-AK, AM-AR, and AT-AY).

The more surprising finding however, was the test results, which found that there was a significant gap between the ethnicity group of black and Hispanic. Hypotheses 10 and 13 compared black and Hispanic students and resulted in rejecting the null hypothesis at both the state of Wisconsin and the urban school district for all three grade levels. The gaps indicate that black students scored significantly lower in mathematics than their Hispanic peers at all three grade levels where grade 4 indicated the largest achievement gap. When looking at the line graphs of white, black, and Hispanic students for proficient and advanced scores, the lines increased drastically when NCLB was put into law in 2002 and leveled out until 2007-08 and then dropped back to their original scores once the standard scores were raised again. Since then they have leveled out (See Appendices AB through AD). Also, the trend lines of white students run much higher than the black and Hispanic trend lines. Based on this analysis, the researcher determined that white students performed significantly higher than their black and Hispanic peers in both the state of Wisconsin and the urban school district. Although, the gap
is less noticeable in the urban district compared to the entire state of Wisconsin. The gap between black and Hispanics was significant, indicating an achievement gap with black students under performing their Hispanic peers. It does not appear that the NCLB legislation has had an impact on varying ethnicity groups since the achievement gap of white students has been significantly higher than their peers over the entire seventeen year period accessed.

**Disabled Students Compared to Non-Disabled Students**

The fourth set the hypotheses compared disabled students and non-disabled students and the results were similar to what previous research indicated. To determine if a significant gap existed the researcher conducted a one-tailed $t$-test with a .05 level of significance and rejected the null hypotheses if the $t$-statistic fell below a critical value of -1.76. In all six cases, 4$^{th}$, 8$^{th}$, and 10$^{th}$ grade students for both the state of Wisconsin and the urban district the $t$-statistic fell significantly into the rejection area. These results indicate that students with disabilities are scoring significantly lower than their non-disabled peers. This was expected because a disabled learner has a significant learning disability that puts them at a disadvantage when compared with non-disabled students. The researcher noticed that the scores in the urban school district were much less than the entire state of Wisconsin. Even though a significant gap exists in the urban district between disabled and non-disabled students, there is less of a gap than compared to the state as a whole (See Appendices AZ through BL). This data alone showed that NCLB has set unrealistic expectations for disabled students when compared to their non-disabled peers.
Conclusions

This study indicated that although the government stated that NCLB was successful and has helped improve the education system through their research by the National Assessment of Educational Progress (NAEP), it clearly has not. NAEP is a national test most schools throughout the country do not use every year. Therefore most schools may not fall in the analysis of NAEP’s data. All states administer an alternative state assessment like Wisconsin with the Wisconsin Knowledge and Concepts Examination (WKCE). Each test measured the same standards and benchmarks, yet they both gave out different results. The data that NCLB reported was not reliable since schools that take this test are only a fraction of the United States’ education system. School districts that do not use the NAEP – like those located in the urban school district researched, have shown the reality of the education system and how NCLB has had little to no impact within the state of Wisconsin. The WKCE data is a more accurate and reliable data collection device because it included all schools throughout the state of Wisconsin both urban and rural.

Therefore, the researcher concludes that there seems to be no consistent significant progress made in the success of Wisconsin’s mathematics students in grades 4, 8, and 10 since NCLB was enacted in 2002.

Limitations

Due to the location of where this study took place, information was only compiled from the state of Wisconsin and with only one large urban school district. Further research may be needed in multiple school districts both urban and rural throughout the entire state to determine if there are similar results across all of Wisconsin. It would also be beneficial to research
multiple states and school districts within those states to determine if there are similar results across the entire United States. The researcher’s theory, based on these significant results, from Wisconsin is that there will be similar results across every state in the nation. As a classroom teacher, the researcher has found that improvement in student test scores comes from improving the quality of instruction in the classroom. The purpose of NCLB was to improve the requirements for teachers and in return assumed it improved the quality of teachers who worked in the classroom. Over a seventeen-year period, no significant student learning results were seen in this study and therefore these requirements didn’t seem to have much impact at all on improving student learning.

**Recommendations**

If the government wants to have more accurate data they should look into every state and collect data from each state test that is given. From there, much like this study, they can determine what works and what doesn’t. Clearly NCLB has not helped the national education system since being enacted into law back in 2002. The billions of dollars put into implementing this law were wasted and could have helped in some other way that may have been more beneficial to our nation’s students. The researcher believes there should be further research concerning the quality of teacher training before they enter the classroom fulltime. This is where educational money should be invested so that more teachers become better prepared and qualified and thus the instruction provided to students will improve. Learning is not only about the content but the management and atmosphere of a classroom as well. Until all of these aspects of the classroom are changed, this researcher doesn’t believe the nation will see much change in the learning results observed from state assessments.
Chapter Summary

This study analyzed different assessment groups in the state of Wisconsin and an urban school district within the state of Wisconsin to investigate whether or no NCLB impacted student achievement over a seventeen year time span. This study confirmed that No Child Left Behind (NCLB) had no impact on student achievement. After discussing the limitations of the study, the rest of the chapter gives insight into areas for potential research as well as recommendations for improving teacher-training programs.
References


Hoff, D.J. (2007). Growth models gaining in accountability debate. Education Week, 27(16), 22-25


Ravitch, D. (2009). Time to Kill ‘No Child Left Behind’ Education Week, 28(33), 30 & 36


Appendix A: WKCE Proficient and Advanced Percentiles

Grades 4, 8, and 10 for Wisconsin and Urban District

1997-1998 School Year

<table>
<thead>
<tr>
<th>4th Grade WKCE mathematics Test</th>
<th>Total Enrolled</th>
<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
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<td>0.52</td>
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<td>0.17</td>
<td>0.56</td>
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</table>

<table>
<thead>
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<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
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<table>
<thead>
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<th>% Advanced</th>
<th>% Prof. and Adv.</th>
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<td>Students in Urban District</td>
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1998-1999 School Year

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<th>% Advanced</th>
<th>% Prof. and Adv.</th>
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<th>Total Enrolled</th>
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<th>% Advanced</th>
<th>% Prof. and Adv.</th>
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## 1999-2000 School Year

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### 8th Grade WKCE mathematics Test

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<th>% Prof. and Adv.</th>
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## 2000-2001 School Year

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### 10th Grade WKCE mathematics Test

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### 2001-2002 School Year

#### 4th Grade WKCE mathematics Test

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#### 8th Grade WKCE mathematics Test

<table>
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#### 10th grade WKCE mathematics Test

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### 2002-2003 School Year

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<td>0.69</td>
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#### 8th Grade WKCE mathematics Test

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<thead>
<tr>
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#### 10th grade WKCE mathematics Test

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<thead>
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<th>Total Enrolled</th>
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#### 4th Grade WKCE mathematics Test

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#### 8th Grade WKCE mathematics Test

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#### 10th grade WKCE mathematics Test

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<tr>
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### 2004-2005 School Year

#### 4th Grade WKCE mathematics Test

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<td>0.66</td>
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#### 8th Grade WKCE mathematics Test

<table>
<thead>
<tr>
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<th>% Advanced</th>
<th>% Prof. and Adv.</th>
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#### 10th grade WKCE mathematics Test

<table>
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<th>% Advanced</th>
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### 2006-2007 School Year

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<td>0.43</td>
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<tr>
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<td>1481</td>
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<td>0.06</td>
<td>0.43</td>
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</table>

#### 8th Grade WKCE mathematics Test

<table>
<thead>
<tr>
<th></th>
<th>Total Enrolled</th>
<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
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<td>62902</td>
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<tr>
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#### 10th grade WKCE mathematics Test

<table>
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<tr>
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<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>Students in Urban District</td>
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<td>0.08</td>
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</table>

### 2008-2009 School Year

#### 4th Grade WKCE mathematics Test

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#### 8th Grade WKCE mathematics Test

<table>
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<th>% Proficient</th>
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</tr>
</thead>
<tbody>
<tr>
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#### 10th grade WKCE mathematics Test

<table>
<thead>
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<tr>
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### 2009-2010 School Year

#### 4th Grade WKCE mathematics Test

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<tr>
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#### 8th Grade WKCE mathematics Test

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#### 10th grade WKCE mathematics Test

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#### 4th Grade WKCE mathematics Test

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<tr>
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#### 8th Grade WKCE mathematics Test

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<tr>
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#### 10th grade WKCE mathematics Test

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<th>% Prof. and Adv.</th>
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### 2011-2012 School Year

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<th>Subject</th>
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<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
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### 2012-2013 School Year

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<th>% Advanced</th>
<th>% Prof. and Adv.</th>
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<td>WKCE mathematics Test</td>
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2013-2014 School Year

<table>
<thead>
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<th>Test</th>
<th>Total Enrolled</th>
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<th>% Advanced</th>
<th>% Prof. and Adv.</th>
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</thead>
<tbody>
<tr>
<td><strong>4th Grade WKCE mathematics Test</strong></td>
<td>Students in Wisconsin Public Schools</td>
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<td>0.42</td>
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<td>0.41</td>
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<td>0.07</td>
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</tbody>
</table>
## Appendix B: 4th Grade Comparison Tables

### Wisconsin (4th grd)

<table>
<thead>
<tr>
<th>Year</th>
<th>% Prof. and Adv. Urban District</th>
<th>% Prof. and Adv. Year n after n year n+1</th>
<th>% Prof. and Adv. Wisc. Urban</th>
<th>% Prof. and Adv. Wisc. Year n after n year n+1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998-99</td>
<td>0.75</td>
<td>0.74</td>
<td>0.52</td>
<td>0.77</td>
</tr>
<tr>
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<td>0.69</td>
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</tr>
<tr>
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<td>0.69</td>
<td>0.69</td>
<td>0.51</td>
</tr>
<tr>
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<td>0.69</td>
<td>0.69</td>
<td>0.75</td>
<td>0.41</td>
</tr>
<tr>
<td>2002-03</td>
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<td>0.66</td>
<td>0.75</td>
<td>0.49</td>
</tr>
<tr>
<td>2003-04</td>
<td>0.66</td>
<td>0.66</td>
<td>0.75</td>
<td>0.49</td>
</tr>
<tr>
<td>2004-05</td>
<td>0.66</td>
<td>0.75</td>
<td>0.75</td>
<td>0.43</td>
</tr>
<tr>
<td>2005-06</td>
<td>0.75</td>
<td>0.43</td>
<td>0.75</td>
<td>0.43</td>
</tr>
<tr>
<td>2006-07</td>
<td>0.43</td>
<td>0.52</td>
<td>0.75</td>
<td>0.44</td>
</tr>
<tr>
<td>2007-08</td>
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<td>0.75</td>
<td>0.47</td>
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<tr>
<td>2008-09</td>
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<tr>
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<td>0.77</td>
<td>0.75</td>
<td>0.47</td>
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<tr>
<td>2010-11</td>
<td>0.77</td>
<td>0.43</td>
<td>0.75</td>
<td>0.44</td>
</tr>
<tr>
<td>2011-12</td>
<td>0.43</td>
<td>0.52</td>
<td>0.75</td>
<td>0.41</td>
</tr>
</tbody>
</table>
Appendix C: t-stat of WI vs. Urban District for Appendix B

t-Test: Paired Two Sample for Means
H0: \( \mu_{(urb.\ d)} \geq \mu_{(Wisconsin)} \)
H1: \( \mu_{(urb.\ d)} < \mu_{(Wisconsin)} \)

4th grade Wisconsin vs. Urban District

| VAR  | Sample size | Mean  | Standard Deviation | Variance |  |  |  |  |
|------|-------------|-------|--------------------|----------|  |  |  |  |
| 0.71 | 15          | 0.57933 | 0.12192            | 0.01486  | urban | Wisconsin  |  |  |
| 0.75 | 15          | 0.61   | 0.12048            | 0.01451  |  |  |  |  |

Paired two-sample t-test

- Degrees of Freedom: 14
- Hypothesized Mean Difference: 0
- Pooled Variance: 0.01469
- Test Statistics: -3.94447
- Pearson Correlation Coefficient: 0.96921

Two-tailed distribution

- \( p \)-level: 0.00147
- Critical Value (5%): 2.14479

One-tailed distribution

- \( p \)-level: 0.00073
- Critical Value (5%): -1.76131
Appendix D: t-stat of WI Consecutive Years for Appendix B

**t-Test: Paired Two Sample for Means**

H0: $\mu(\text{Wis.} \ n) \geq \mu(\text{Wis.} \ n+1)$
H1: $\mu(\text{Wis.} \ n) < \mu(\text{Wis.} \ n+1)$

**Wisconsin 4th grade**

**Descriptive Statistics**

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sample size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.75</td>
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<td>0.01424</td>
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</tbody>
</table>

**Paired two-sample t-test**

- Degrees of Freedom: 13
- Hypothesized Mean Difference: 0
- Pooled Variance: 0.0146
- Test Statistics: 0.58187
- Pearson Correlation Coefficient: 0.65052

**Two-tailed distribution**

| p-level | 0.57061 | Critical Value (5%) | 2.16037 |

**One-tailed distribution**

| p-level | 0.2853 | Critical Value (5%) | -1.77093 |
Appendix E: t-statistics of Urban District Consecutive Years for Appendix B

t-Test: Paired Two Sample for Means
H0: μ(urb. d n) ≥ μ(urb. d. n+1)
H1: μ(urb. d n) < μ(urb. d n+1)

### Urban District 4th Grade

<table>
<thead>
<tr>
<th></th>
<th>Sample Size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
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</thead>
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**Paired two-sample t-test**

- **Degrees of Freedom**: 13
- **Hypothesized Mean Difference**: 0
- **Pooled Variance**: 0.01376
- **Test Statistics**: 0.8802
- **Pearson Correlation Coefficient**: 0.63524

**Two-tailed distribution**

- **p-level**: 0.39473
- **Critical Value (5%)**: 2.16037

**One-tailed distribution**

- **p-level**: 0.19737
- **Critical Value (5%)**: -1.77093
### Wisconsin 8th Grade Comparison Tables

<table>
<thead>
<tr>
<th>Year</th>
<th>% Prof. &amp; Adv.</th>
<th>Year</th>
<th>% Prof. &amp; Adv.</th>
</tr>
</thead>
<tbody>
<tr>
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**Urban & District 8th Grade Comparison Tables**

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<th>Year</th>
<th>% Prof. &amp; Adv.</th>
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<tr>
<td>2008-09</td>
<td>0.41</td>
<td>2010-11</td>
<td>0.44</td>
</tr>
<tr>
<td>2009-10</td>
<td>0.44</td>
<td>2011-12</td>
<td>0.41</td>
</tr>
<tr>
<td>2010-11</td>
<td>0.41</td>
<td>2012-13</td>
<td>0.44</td>
</tr>
<tr>
<td>2011-12</td>
<td>0.44</td>
<td>2013-14</td>
<td>0.36</td>
</tr>
</tbody>
</table>

Note: Table 3: 8th Grade Comparison Tables

---

**Source:** The Effectiveness of No Child Left Behind
t-Test: Paired Two Sample for Means
H0: \( \mu_{\text{urb. d}} \geq \mu_{\text{Wisconsin}} \)
H1: \( \mu_{\text{urb. d}} < \mu_{\text{Wisconsin}} \)

### 8th grade urban district vs. Wisconsin

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sample size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>urban</td>
<td>15</td>
<td>0.47733</td>
<td>0.14719</td>
<td>0.02166</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>15</td>
<td>0.52333</td>
<td>0.14216</td>
<td>0.02021</td>
</tr>
</tbody>
</table>

**Paired two-sample t-test**

<table>
<thead>
<tr>
<th>Degrees of Freedom</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Hypothesized Mean Difference</td>
<td>0.02094</td>
</tr>
<tr>
<td>Test Statistics</td>
<td>-5.00203</td>
</tr>
<tr>
<td>Pearson Correlation Coefficient</td>
<td>0.97029</td>
</tr>
</tbody>
</table>

**Two-tailed distribution**

| p-level | Critical Value (5%) | 2.14479 |

**One-tailed distribution**

| p-level | Critical Value (5%) | -1.76131 |
Appendix H: 8th grade t-statistics of WI Consecutive Years for Appendix F

t-Test: Paired Two Sample for Means
H0: μ(Wis. n) ≥ μ(Wis. n+1)
H1: μ(Wis. n) < μ(Wis. n+1)

Wisconsin 8th grade

Descriptive Statistics

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sample size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.42</td>
<td>14</td>
<td>0.52786</td>
<td>0.1464</td>
<td>0.02143</td>
</tr>
<tr>
<td>0.42</td>
<td>14</td>
<td>0.53071</td>
<td>0.14451</td>
<td>0.02088</td>
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</table>

Paired two-sample t-test

<table>
<thead>
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<th>Degrees of Freedom</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Hypothesized Mean Difference</td>
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</tr>
<tr>
<td>Pooled Variance</td>
<td>0.02116</td>
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<td>Test Statistics</td>
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<tr>
<td>Pearson Correlation Coefficient</td>
<td>0.59526</td>
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</table>

Two-tailed distribution

| p-level | 0.93614 | Critical Value (5%) | 2.16037 |

One-tailed distribution

| p-level | 0.46807 | Critical Value (5%) | -1.77093 |
Appendix I: 8th grade t-statistics of Urban District Consecutive Years for Appendix F

t-Test: Paired Two Sample for Means
H0: μ(urb. d. n) ≥ μ(urb. d. n+1)
H1: μ(urb d n) < μ(urb d n+1)

Urban District 8th Grade

Descriptive Statistics

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sample size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.33</td>
<td>14</td>
<td>0.48714</td>
<td>0.14757</td>
<td>0.02178</td>
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<tr>
<td>0.35</td>
<td>14</td>
<td>0.48643</td>
<td>0.1483</td>
<td>0.02199</td>
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</table>

Paired two-sample t-test

<table>
<thead>
<tr>
<th>Degrees of Freedom</th>
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</tr>
</thead>
<tbody>
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<td>Hypothesized Mean Difference</td>
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<td>Pooled Variance</td>
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<tr>
<td>Test Statistics</td>
<td>0.57068</td>
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</tbody>
</table>

Two-tailed distribution

| p-level | 0.98474 | Critical Value (5%) | 2.16037 |

One-tailed distribution

| p-level | 0.49237 | Critical Value (5%) | -1.77093 |
## Appendix J: 10th Grade Comparison Tables

### Wisconsin (10th grad)

<table>
<thead>
<tr>
<th>Year After Year</th>
<th>Year +1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998-99</td>
<td>0.39</td>
</tr>
<tr>
<td>1999-00</td>
<td>0.39</td>
</tr>
<tr>
<td>2000-01</td>
<td>0.46</td>
</tr>
<tr>
<td>2001-02</td>
<td>0.43</td>
</tr>
<tr>
<td>2002-03</td>
<td>0.69</td>
</tr>
<tr>
<td>2003-04</td>
<td>0.69</td>
</tr>
<tr>
<td>2004-05</td>
<td>0.71</td>
</tr>
<tr>
<td>2005-06</td>
<td>0.7</td>
</tr>
<tr>
<td>2006-07</td>
<td>0.7</td>
</tr>
<tr>
<td>2007-08</td>
<td>0.42</td>
</tr>
<tr>
<td>2008-09</td>
<td>0.39</td>
</tr>
<tr>
<td>2009-10</td>
<td>0.41</td>
</tr>
<tr>
<td>2010-11</td>
<td>0.42</td>
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<tr>
<td>2011-12</td>
<td>0.43</td>
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<tr>
<td>2012-13</td>
<td>0.44</td>
</tr>
<tr>
<td>2013-14</td>
<td>0.45</td>
</tr>
</tbody>
</table>

### Urban District (10th grad)

<table>
<thead>
<tr>
<th>Year After Year</th>
<th>Year +1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998-99</td>
<td>0.22</td>
</tr>
<tr>
<td>1999-00</td>
<td>0.63</td>
</tr>
<tr>
<td>2000-01</td>
<td>0.22</td>
</tr>
<tr>
<td>2001-02</td>
<td>0.32</td>
</tr>
<tr>
<td>2002-03</td>
<td>0.32</td>
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<td>2003-04</td>
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</tr>
<tr>
<td>2004-05</td>
<td>0.6</td>
</tr>
<tr>
<td>2005-06</td>
<td>0.63</td>
</tr>
<tr>
<td>2006-07</td>
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</tr>
<tr>
<td>2007-08</td>
<td>0.63</td>
</tr>
<tr>
<td>2008-09</td>
<td>0.34</td>
</tr>
<tr>
<td>2009-10</td>
<td>0.31</td>
</tr>
<tr>
<td>2010-11</td>
<td>0.3</td>
</tr>
<tr>
<td>2011-12</td>
<td>0.33</td>
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<tr>
<td>2012-13</td>
<td>0.3</td>
</tr>
<tr>
<td>2013-14</td>
<td>0.35</td>
</tr>
</tbody>
</table>
Appendix K: 10th grade t-statistics of WI vs. Urban District for Appendix J

- **t-Test: Paired Two Sample for Means**
- **H0**: \( \mu(\text{urb. d}) \geq \mu(\text{Wisconsin}) \)
- **H1**: \( \mu(\text{urb. d}) < \mu(\text{Wisconsin}) \)

### 10th Grade Urban District vs. Wisconsin

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sample size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.22</td>
<td>15</td>
<td>0.41333</td>
<td>0.15136</td>
<td>0.02291</td>
</tr>
<tr>
<td>0.39</td>
<td>15</td>
<td>0.51533</td>
<td>0.13506</td>
<td>0.01824</td>
</tr>
</tbody>
</table>

**Paired two-sample t-test**

<table>
<thead>
<tr>
<th>Degrees of Freedom</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesized Mean Difference</td>
<td>0.0</td>
</tr>
<tr>
<td>Pooled Variance</td>
<td>0.02058</td>
</tr>
<tr>
<td>Test Statistics</td>
<td>-14.46637</td>
</tr>
<tr>
<td>Pearson Correlation Coefficient</td>
<td>0.98826</td>
</tr>
</tbody>
</table>

**Two-tailed distribution**

| p-level | 8.21094E-10 | Critical Value (5%) | 2.14479 |

**One-tailed distribution**

| p-level | 4.10547E-10 | Critical Value (5%) | -1.76131 |
Appendix L: 10th grade t-statistics of WI Consecutive Years for Appendix J

\begin{align*}
\text{t-Test: Paired Two Sample for Means} \\
\text{H0: } & \mu(\text{Wis. } n) \geq \mu(\text{Wis. } n+1) \\
\text{H1: } & \mu(\text{Wis. } n) < \mu(\text{Wis. } n+1) \\
\text{Wisconsin 10th Grade} \\
\text{Descriptive Statistics} \\
\begin{array}{|c|c|c|c|c|}
\hline
\text{VAR} & \text{Sample size} & \text{Mean} & \text{Standard Deviation} & \text{Variance} \\
\hline
0.39 & 14 & 0.52 & 0.1389 & 0.01929 \\
0.39 & 14 & 0.52429 & 0.13546 & 0.01835 \\
\hline
\end{array}
\end{align*}

\begin{align*}
\text{Paired two-sample } t\text{-test} \\
\text{Degrees of Freedom} & \quad 13 \\
\text{Hypothesized Mean Difference} & \quad 0 \\
\text{Pooled Variance} & \quad 0.01882 \\
\text{Test Statistics} & \quad -0.14746 \\
\text{Pearson Correlation Coefficient} & \quad 0.68603 \\
\end{align*}

\begin{align*}
\text{Two-tailed distribution} \\
\text{p-level} & \quad 0.88503 \\
\text{Critical Value (5%)} & \quad 2.16037 \\
\end{align*}

\begin{align*}
\text{One-tailed distribution} \\
\text{p-level} & \quad 0.44252 \\
\text{Critical Value (5%)} & \quad -1.77093 \\
\end{align*}
Appendix M: 10th grade t-stat of Urban District Consecutive Years for Appendix J

**t-Test: Paired Two Sample for Means**
H0: \(\mu_{(urb. D n)} \geq \mu_{(urb. d n+1)}\)
H1: \(\mu_{(urb. d n)} < \mu_{(urb. d n+1)}\)

**Urban District 10th Grade**

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sample size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.22</td>
<td>14</td>
<td>0.41786</td>
<td>0.15602</td>
<td>0.02434</td>
<td>n</td>
</tr>
<tr>
<td>0.22</td>
<td>14</td>
<td>0.42714</td>
<td>0.14694</td>
<td>0.02159</td>
<td>n+1</td>
</tr>
</tbody>
</table>

**Paired two-sample t-test**

- Degrees of Freedom: 13
- Hypothesized Mean Difference: 0
- Pooled Variance: 0.02297
- Test Statistics: -0.29819
- Pearson Correlation Coefficient: 0.70569

**Two-tailed distribution**

<table>
<thead>
<tr>
<th>p-level</th>
<th>Critical Value (5%)</th>
<th>2.16037</th>
</tr>
</thead>
</table>

**One-tailed distribution**

<table>
<thead>
<tr>
<th>p-level</th>
<th>Critical Value (5%)</th>
<th>-1.77093</th>
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</thead>
</table>
Appendix N: WKCE Proficient and Advanced Percentiles

Grades 4, 8, and 10 for Males and Females

1997-1998 School Year

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>Test Subject</th>
<th>Total Enrolled</th>
<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>4th Grade WKCE mathematics Test</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males in Wisconsin Public Schools</td>
<td>32064</td>
<td>0.37</td>
<td>0.15</td>
<td>0.52</td>
<td></td>
</tr>
<tr>
<td>Females in Wisconsin Public Schools</td>
<td>30191</td>
<td>0.37</td>
<td>0.15</td>
<td>0.52</td>
<td></td>
</tr>
<tr>
<td>Males in Urban District</td>
<td>746</td>
<td>0.39</td>
<td>0.18</td>
<td>0.57</td>
<td></td>
</tr>
<tr>
<td>Females in Urban District</td>
<td>639</td>
<td>0.41</td>
<td>0.17</td>
<td>0.58</td>
<td></td>
</tr>
<tr>
<td><strong>8th Grade WKCE mathematics Test</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males in Wisconsin Public Schools</td>
<td>33078</td>
<td>0.22</td>
<td>0.09</td>
<td>0.31</td>
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</tr>
<tr>
<td>Females in Wisconsin Public Schools</td>
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<td>Males in Urban District</td>
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<tr>
<td>Females in Urban District</td>
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<td>0.03</td>
<td>0.17</td>
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</tr>
<tr>
<td><strong>10th grade WKCE mathematics Test</strong></td>
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</tr>
<tr>
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<td>0.02</td>
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### 1998-1999 School Year

<table>
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<th>Test Type</th>
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<th>Proficient %</th>
<th>Advanced %</th>
<th>Prof. and Adv. %</th>
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</thead>
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<td><strong>4th Grade WKCE mathematics Test</strong></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males in Wisconsin Public Schools</td>
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<td>33140</td>
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<td>0.3</td>
<td>0.74</td>
</tr>
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<td>Females in Wisconsin Public Schools</td>
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<td>30973</td>
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<td>0.29</td>
<td>0.74</td>
</tr>
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<td>Males in Urban District</td>
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<td>0.46</td>
<td>0.27</td>
<td>0.73</td>
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<tr>
<td>Females in Urban District</td>
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<td>660</td>
<td>0.46</td>
<td>0.24</td>
<td>0.7</td>
</tr>
<tr>
<td><strong>8th Grade WKCE mathematics Test</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males in Wisconsin Public Schools</td>
<td></td>
<td>34920</td>
<td>0.28</td>
<td>0.15</td>
<td>0.43</td>
</tr>
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<td>33096</td>
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<td>0.13</td>
<td>0.41</td>
</tr>
<tr>
<td>Males in Urban District</td>
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<td>632</td>
<td>0.24</td>
<td>0.13</td>
<td>0.37</td>
</tr>
<tr>
<td>Females in Urban District</td>
<td></td>
<td>613</td>
<td>0.22</td>
<td>0.11</td>
<td>0.33</td>
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<tr>
<td><strong>10th grade WKCE mathematics Test</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males in Wisconsin Public Schools</td>
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</tr>
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</table>
### 1999-2000 School Year

#### 4th Grade WKCE mathematics Test

<table>
<thead>
<tr>
<th>Gender/Urban District</th>
<th>Total Enrolled</th>
<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males in Wisconsin Public Schools</td>
<td>32979</td>
<td>0.42</td>
<td>0.32</td>
<td>0.74</td>
</tr>
<tr>
<td>Females in Wisconsin Public Schools</td>
<td>31684</td>
<td>0.44</td>
<td>0.31</td>
<td>0.75</td>
</tr>
<tr>
<td>Males in Urban District</td>
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<td>0.43</td>
<td>0.31</td>
<td>0.74</td>
</tr>
<tr>
<td>Females in Urban District</td>
<td>707</td>
<td>0.42</td>
<td>0.33</td>
<td>0.75</td>
</tr>
</tbody>
</table>

#### 8th Grade WKCE mathematics Test

<table>
<thead>
<tr>
<th>Gender/Urban District</th>
<th>Total Enrolled</th>
<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males in Wisconsin Public Schools</td>
<td>34603</td>
<td>0.28</td>
<td>0.15</td>
<td>0.43</td>
</tr>
<tr>
<td>Females in Wisconsin Public Schools</td>
<td>32661</td>
<td>0.28</td>
<td>0.14</td>
<td>0.42</td>
</tr>
<tr>
<td>Males in Urban District</td>
<td>695</td>
<td>0.23</td>
<td>0.15</td>
<td>0.38</td>
</tr>
<tr>
<td>Females in Urban District</td>
<td>621</td>
<td>0.22</td>
<td>0.13</td>
<td>0.35</td>
</tr>
</tbody>
</table>

#### 10th grade WKCE mathematics Test

<table>
<thead>
<tr>
<th>Gender/Urban District</th>
<th>Total Enrolled</th>
<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males in Wisconsin Public Schools</td>
<td>34910</td>
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<td>0.12</td>
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</tr>
<tr>
<td>Females in Wisconsin Public Schools</td>
<td>33928</td>
<td>0.29</td>
<td>0.10</td>
<td>0.39</td>
</tr>
<tr>
<td>Males in Urban District</td>
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### 2000-2001 School Year

#### 4th Grade WKCE mathematics Test

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#### 8th Grade WKCE mathematics Test

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### 8th Grade WKCE mathematics Test

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## 2003-2004 School Year

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### 8th Grade WKCE mathematics Test

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### 10th grade WKCE mathematics Test

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## 8th Grade WKCE mathematics Test

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## 10th grade WKCE mathematics Test

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### 2005-2006 School Year

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#### 8th Grade WKCE mathematics Test

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### 2006-2007 School Year

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#### 8th Grade WKCE mathematics Test

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#### 10th grade WKCE mathematics Test

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#### 8th Grade WKCE mathematics Test

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#### 10th grade WKCE mathematics Test

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2011-2012 School Year

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2012-2013 School Year

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2013-2014 School Year

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Appendix O: 4th Grade Male vs. Female Performance Graphs

Wisconsin and Urban District

4th grade Wisconsin Male vs. Female Performance

4th grade Urban Male vs. Female Performance
Appendix P: 8th Grade Male vs. Female Performance Graphs

Wisconsin and Urban District

8th grade Wisconsin Male vs. Female Performance

8th grade Urban Male vs. Female Performance
Appendix Q: 8th Grade Male vs. Female Performance Graphs

Wisconsin and Urban District

10th grade Wisconsin Male vs. Female Performance

10th grade Kenosha Male vs. Female Performance
### 4th Grade Gender Comparison Tables

#### Wisconsin (4th grd)

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#### Urban District (4th grd)

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<td>2007</td>
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<td>0.41</td>
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<tr>
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<tr>
<td>2009</td>
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<td>0.45</td>
</tr>
<tr>
<td>2010</td>
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<tr>
<td>2011</td>
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<td>2012</td>
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<td>0.44</td>
</tr>
<tr>
<td>2013</td>
<td>0.42</td>
<td>0.40</td>
</tr>
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</table>

---
Appendix S: 4th grade t-stat of WI Male vs. Female for Appendix R

t-Test: Paired Two Sample for Means
H0: \( \mu(\text{Wis. Females}) \geq \mu(\text{Wis. Males}) \)
H1: \( \mu(\text{Wis. Females}) < \mu(\text{Wis. Males}) \)

**Wisconsin 4th grade Male vs. Female**

<table>
<thead>
<tr>
<th>VAR</th>
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<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
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</thead>
<tbody>
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<td>0.74</td>
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<td>0.1251</td>
<td>0.0157</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>15</td>
<td>0.61733</td>
<td>0.11436</td>
<td>0.01308</td>
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</table>

**Paired two-sample t-test**

- Degrees of Freedom: 14
- Hypothesized Mean Difference: 0.
- Pooled Variance: 0.01439
- Test Statistics: -3.0893
- Pearson Correlation Coefficient: 0.99129

**Two-tailed distribution**

- \( p \)-level: 0.008
- Critical Value (5%): 2.14479

**One-tailed distribution**

- \( p \)-level: 0.004
- Critical Value (5%): -1.76131
Appendix T: 4th grade t-stat of Urban District Male vs. Female for Appendix R

**t-Test: Paired Two Sample for Means**

H0: \( \mu(\text{Urb D. Females}) \geq \mu(\text{Urb D. Males}) \)

H1: \( \mu(\text{Urb D. Females}) < \mu(\text{Urb D. Males}) \)

**Urban District 4th grade Male vs. Female**

**Descriptive Statistics**

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<tr>
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<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
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</thead>
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<td>0.1191</td>
<td>0.01418</td>
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**Paired two-sample t-test**

- Degrees of Freedom: 14
- Hypothesized Mean Difference: 0
- Pooled Variance: 0.01688
- Test Statistics: -1.6539
- Pearson Correlation Coefficient: 0.95146

**Two-tailed distribution**

- \( p \)-level: 0.12037
- Critical Value (5%): 2.14479

**One-tailed distribution**

- \( p \)-level: 0.06019
- Critical Value (5%): -1.76131
### Appendix U: 8th Grade Gender Comparison Tables

#### Male % Prof. & Adv.

<table>
<thead>
<tr>
<th>Year</th>
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<th>Female %</th>
</tr>
</thead>
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<td>0.43</td>
<td>0.41</td>
</tr>
<tr>
<td>1999:00</td>
<td>0.43</td>
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</tr>
<tr>
<td>2000:01</td>
<td>0.40</td>
<td>0.38</td>
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<tr>
<td>2001:02</td>
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<td>0.43</td>
</tr>
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<td>0.66</td>
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<td>2004:05</td>
<td>0.71</td>
<td>0.73</td>
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<tr>
<td>2005:06</td>
<td>0.73</td>
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<td>2006:07</td>
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<td>2007:08</td>
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</tr>
<tr>
<td>2008:09</td>
<td>0.43</td>
<td>0.41</td>
</tr>
<tr>
<td>2009:10</td>
<td>0.44</td>
<td>0.41</td>
</tr>
<tr>
<td>2010:11</td>
<td>0.46</td>
<td>0.42</td>
</tr>
<tr>
<td>2011:12</td>
<td>0.45</td>
<td>0.44</td>
</tr>
<tr>
<td>2012:13</td>
<td>0.45</td>
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<td>2013:14</td>
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</table>

#### Female % Prof. & Adv.

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</thead>
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<tr>
<td>1999:00</td>
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<td>2000:01</td>
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<tr>
<td>2001:02</td>
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<td>0.73</td>
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<td>2009:10</td>
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<tr>
<td>2010:11</td>
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<td>2011:12</td>
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<td>0.37</td>
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</tr>
<tr>
<td>2013:14</td>
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</tbody>
</table>

#### Urban District 8th Grade Male vs Female

<table>
<thead>
<tr>
<th>Year</th>
<th>Male %</th>
<th>Female %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998:99</td>
<td>0.37</td>
<td>0.33</td>
</tr>
<tr>
<td>1999:00</td>
<td>0.38</td>
<td>0.35</td>
</tr>
<tr>
<td>2000:01</td>
<td>0.36</td>
<td>0.31</td>
</tr>
<tr>
<td>2001:02</td>
<td>0.43</td>
<td>0.40</td>
</tr>
<tr>
<td>2002:03</td>
<td>0.68</td>
<td>0.68</td>
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<tr>
<td>2003:04</td>
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<td>0.61</td>
</tr>
<tr>
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<td>2007:08</td>
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<td>0.33</td>
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<td>0.43</td>
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<td>0.42</td>
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<td>2011:12</td>
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<td>0.41</td>
</tr>
<tr>
<td>2012:13</td>
<td>0.37</td>
<td>0.36</td>
</tr>
<tr>
<td>2013:14</td>
<td>0.40</td>
<td>0.30</td>
</tr>
</tbody>
</table>
Appendix V: 8th grade t-stat of WI Male vs. Female for Appendix U

t-Test: Paired Two Sample for Means
H0: μ(Wis. Females) ≥ μ(Wis. Males)
H1: μ(Wis. Females) < μ(Wis. Males)

### Wisconsin 8th grade Male vs. Female

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sample size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
<th>Females</th>
<th>Males</th>
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</thead>
<tbody>
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<td>0.15142</td>
<td>0.02293</td>
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<td></td>
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<td>0.53067</td>
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<td>0.01832</td>
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<td></td>
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**Paired two-sample t-test**

- Degrees of Freedom: 14
- Hypothesized Mean Difference: 0.
- Pooled Variance: 0.02062
- Test Statistics: -2.4494
- Pearson Correlation Coefficient: 0.99751

**Two-tailed distribution**

<table>
<thead>
<tr>
<th>p-level</th>
<th>Critical Value (5%)</th>
<th>Critical Value (5%)</th>
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</thead>
<tbody>
<tr>
<td>0.02807</td>
<td>2.14479</td>
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</tbody>
</table>

**One-tailed distribution**

<table>
<thead>
<tr>
<th>p-level</th>
<th>Critical Value (5%)</th>
<th>Critical Value (5%)</th>
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</thead>
<tbody>
<tr>
<td>0.01404</td>
<td>-1.76131</td>
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</tbody>
</table>
Appendix W: 8th grade t-stat of Urban District Male vs. Female for Appendix U

t-Test: Paired Two Sample for Means  
H0: μ(Urb D. Females) ≥ μ(Urb D. Males)  
H1: μ(Urb D. Females) < μ(Urb D. Males)

### Urban District 8th grade Male vs. Female

**Descriptive Statistics**

<table>
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<tr>
<th>VAR</th>
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<th>Standard Deviation</th>
<th>Variance</th>
</tr>
</thead>
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<td>0.13891</td>
<td>0.0193</td>
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**Paired two-sample t-test**

<table>
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<tbody>
<tr>
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<td>Pooled Variance</td>
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<tr>
<td>Pearson Correlation Coefficient</td>
<td>0.98066</td>
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</table>

**Two-tailed distribution**

| p-level | 0.21169 | Critical Value (5%) | 2.14479 |

**One-tailed distribution**

| p-level | 0.10585 | Critical Value (5%) | -1.76131 |
### Appendix X: 10th Grade Gender Comparison Tables

#### Wisconsin (10th grd)

<table>
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<th>Year</th>
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<tr>
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<td>0.40</td>
</tr>
<tr>
<td>2000-01</td>
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<td>0.43</td>
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<tr>
<td>2001-02</td>
<td>0.44</td>
<td>0.41</td>
</tr>
<tr>
<td>2002-03</td>
<td>0.68</td>
<td>0.70</td>
</tr>
<tr>
<td>2003-04</td>
<td>0.69</td>
<td>0.68</td>
</tr>
<tr>
<td>2004-05</td>
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<td>0.71</td>
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<tr>
<td>2006-07</td>
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<td>0.69</td>
</tr>
<tr>
<td>2007-08</td>
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<td>0.40</td>
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<tr>
<td>2008-09</td>
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<td>0.37</td>
</tr>
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<td>0.42</td>
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<td>2011-12</td>
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<td>0.45</td>
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<td>0.45</td>
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#### Urban District (10th grd)

<table>
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<th>Female</th>
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</thead>
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<td>1999-00</td>
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<tr>
<td>2000-01</td>
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<td>0.29</td>
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<tr>
<td>2001-02</td>
<td>0.37</td>
<td>0.30</td>
</tr>
<tr>
<td>2002-03</td>
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<td>0.62</td>
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<tr>
<td>2003-04</td>
<td>0.62</td>
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<td>2007-08</td>
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<td>2008-09</td>
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<tr>
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<td>2011-12</td>
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<td>0.31</td>
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<td>0.34</td>
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<table>
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<th>Year</th>
<th>Male vs Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998-99</td>
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</tr>
<tr>
<td>1999-00</td>
<td>0.40 vs 0.40</td>
</tr>
<tr>
<td>2000-01</td>
<td>0.49 vs 0.43</td>
</tr>
<tr>
<td>2001-02</td>
<td>0.44 vs 0.41</td>
</tr>
<tr>
<td>2002-03</td>
<td>0.68 vs 0.70</td>
</tr>
<tr>
<td>2003-04</td>
<td>0.69 vs 0.68</td>
</tr>
<tr>
<td>2004-05</td>
<td>0.70 vs 0.71</td>
</tr>
<tr>
<td>2005-06</td>
<td>0.70 vs 0.72</td>
</tr>
<tr>
<td>2006-07</td>
<td>0.70 vs 0.69</td>
</tr>
<tr>
<td>2007-08</td>
<td>0.44 vs 0.40</td>
</tr>
<tr>
<td>2008-09</td>
<td>0.41 vs 0.37</td>
</tr>
<tr>
<td>2009-10</td>
<td>0.42 vs 0.39</td>
</tr>
<tr>
<td>2010-11</td>
<td>0.44 vs 0.42</td>
</tr>
<tr>
<td>2011-12</td>
<td>0.45 vs 0.42</td>
</tr>
<tr>
<td>2012-13</td>
<td>0.46 vs 0.45</td>
</tr>
<tr>
<td>2013-14</td>
<td>0.46 vs 0.45</td>
</tr>
</tbody>
</table>
Appendix Y: 10th grade t-stat of WI Male vs. Female for Appendix X

t-Test: Paired Two Sample for Means
H0: μ(Wis. Females) ≥ μ(Wis. Males)
H1: μ(Wis. Females) < μ(Wis. Males)

Wisconsin 10th grade Male vs. Female

Descriptive Statistics

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sample size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
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Paired two-sample t-test

<table>
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</thead>
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<tr>
<td>Hypothesized Mean Difference</td>
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<tr>
<td>Pearson Correlation Coefficient</td>
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</table>

Two-tailed distribution

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<tr>
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</thead>
<tbody>
<tr>
<td>Critical Value (5%)</td>
<td>2.14479</td>
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</tbody>
</table>

One-tailed distribution

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<th>p-level</th>
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<tr>
<td>Critical Value (5%)</td>
<td>-1.76131</td>
</tr>
</tbody>
</table>
t-Test: Paired Two Sample for Means
H0: \( \mu(\text{Urb D. Females}) \geq \mu(\text{Urb D. Males}) \)
H1: \( \mu(\text{Urb D. Females}) < \mu(\text{Urb D. Males}) \)

**Urban District 10th grade Male vs. Female**

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sample size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
</tr>
</thead>
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<td>0.16657</td>
<td>0.02775</td>
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<tr>
<td>0.27</td>
<td>15</td>
<td>0.43733</td>
<td>0.1419</td>
<td>0.02014</td>
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</table>

**Paired two-sample t-test**

<table>
<thead>
<tr>
<th>Degrees of Freedom</th>
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</thead>
<tbody>
<tr>
<td>Hypothesized Mean Difference</td>
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</tr>
<tr>
<td>Pooled Variance</td>
<td>0.02394</td>
</tr>
<tr>
<td>Test Statistics</td>
<td>-3.4680</td>
</tr>
<tr>
<td>Pearson Correlation Coefficient</td>
<td>0.98028</td>
</tr>
</tbody>
</table>

**Two-tailed distribution**

| p-level | Critical Value (5%) | 2.14479 |

**One-tailed distribution**

| p-level | Critical Value (5%) | -1.76131 |
Appendix AA: WKCE Proficient and Advanced Percentiles

Grades 4, 8, and 10 for White, Black, and Hispanics

1997-1998 School Year

<table>
<thead>
<tr>
<th>4th Grade WKCE mathematics Test</th>
<th>Total Enrolled</th>
<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>White students in Wisconsin Public Schools</td>
<td>50312</td>
<td>0.41</td>
<td>0.17</td>
<td>0.58</td>
</tr>
<tr>
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<td>6518</td>
<td>0.15</td>
<td>0.02</td>
<td>0.17</td>
</tr>
<tr>
<td>Hispanic students in Wisconsin Public Schools</td>
<td>2149</td>
<td>0.23</td>
<td>0.05</td>
<td>0.28</td>
</tr>
<tr>
<td>White students in Urban District</td>
<td>1089</td>
<td>0.45</td>
<td>0.2</td>
<td>0.65</td>
</tr>
<tr>
<td>Black students in Urban District</td>
<td>166</td>
<td>0.14</td>
<td>0.01</td>
<td>0.15</td>
</tr>
<tr>
<td>Hispanic students in Urban District</td>
<td>120</td>
<td>0.25</td>
<td>0.11</td>
<td>0.36</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8th Grade WKCE mathematics Test</th>
<th>Total Enrolled</th>
<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>White students in Wisconsin Public Schools</td>
<td>54345</td>
<td>0.25</td>
<td>0.1</td>
<td>0.35</td>
</tr>
<tr>
<td>Black students in Wisconsin Public Schools</td>
<td>5536</td>
<td>0.04</td>
<td>0.01</td>
<td>0.05</td>
</tr>
<tr>
<td>Hispanic students in Wisconsin Public Schools</td>
<td>2075</td>
<td>0.09</td>
<td>0.02</td>
<td>0.11</td>
</tr>
<tr>
<td>White students in Urban District</td>
<td>1015</td>
<td>0.18</td>
<td>0.05</td>
<td>0.23</td>
</tr>
<tr>
<td>Black students in Urban District</td>
<td>128</td>
<td>0.04</td>
<td>0.01</td>
<td>0.05</td>
</tr>
<tr>
<td>Hispanic students in Urban District</td>
<td>121</td>
<td>0.04</td>
<td>0</td>
<td>0.04</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>10th grade WKCE mathematics Test</th>
<th>Total Enrolled</th>
<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>White students in Wisconsin Public Schools</td>
<td>57859</td>
<td>0.31</td>
<td>0.09</td>
<td>0.4</td>
</tr>
<tr>
<td>Black students in Wisconsin Public Schools</td>
<td>5011</td>
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<td>0.01</td>
<td>0.05</td>
</tr>
<tr>
<td>Hispanic students in Wisconsin Public Schools</td>
<td>2049</td>
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<td>0.02</td>
<td>0.12</td>
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<tr>
<td>White students in Urban District</td>
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</tr>
<tr>
<td>Black students in Urban District</td>
<td>185</td>
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<td>0</td>
<td>0.01</td>
</tr>
<tr>
<td>Hispanic students in Urban District</td>
<td>173</td>
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<td>0</td>
<td>0.03</td>
</tr>
</tbody>
</table>
### 1998-1999 School Year

#### 4th Grade WKCE mathematics Test

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<th>Total Enrolled</th>
<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>White students in Wisconsin Public Schools</td>
<td>50993</td>
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<td>0.34</td>
<td>0.81</td>
</tr>
<tr>
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<td>6966</td>
<td>0.34</td>
<td>0.07</td>
<td>0.41</td>
</tr>
<tr>
<td>Hispanic students in Wisconsin Public Schools</td>
<td>2511</td>
<td>0.39</td>
<td>0.1</td>
<td>0.49</td>
</tr>
<tr>
<td>White students in Urban District</td>
<td>1081</td>
<td>0.49</td>
<td>0.3</td>
<td>0.79</td>
</tr>
<tr>
<td>Black students in Urban District</td>
<td>161</td>
<td>0.32</td>
<td>0.06</td>
<td>0.39</td>
</tr>
<tr>
<td>Hispanic students in Urban District</td>
<td>117</td>
<td>0.4</td>
<td>0.09</td>
<td>0.49</td>
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</tbody>
</table>

#### 8th Grade WKCE mathematics Test

<table>
<thead>
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<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>White students in Wisconsin Public Schools</td>
<td>56403</td>
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<td>0.16</td>
<td>0.48</td>
</tr>
<tr>
<td>Black students in Wisconsin Public Schools</td>
<td>5791</td>
<td>0.06</td>
<td>0.01</td>
<td>0.07</td>
</tr>
<tr>
<td>Hispanic students in Wisconsin Public Schools</td>
<td>2274</td>
<td>0.14</td>
<td>0.03</td>
<td>0.17</td>
</tr>
<tr>
<td>White students in Urban District</td>
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<td>0.15</td>
<td>0.42</td>
</tr>
<tr>
<td>Black students in Urban District</td>
<td>129</td>
<td>0.04</td>
<td>0</td>
<td>0.04</td>
</tr>
<tr>
<td>Hispanic students in Urban District</td>
<td>107</td>
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<td>0.01</td>
<td>0.11</td>
</tr>
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</table>

#### 10th grade WKCE mathematics Test

<table>
<thead>
<tr>
<th></th>
<th>Total Enrolled</th>
<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>White students in Wisconsin Public Schools</td>
<td>58389</td>
<td>0.31</td>
<td>0.12</td>
<td>0.43</td>
</tr>
<tr>
<td>Black students in Wisconsin Public Schools</td>
<td>5028</td>
<td>0.05</td>
<td>0.01</td>
<td>0.06</td>
</tr>
<tr>
<td>Hispanic students in Wisconsin Public Schools</td>
<td>2214</td>
<td>0.12</td>
<td>0.03</td>
<td>0.15</td>
</tr>
<tr>
<td>White students in Urban District</td>
<td>996</td>
<td>0.21</td>
<td>0.07</td>
<td>0.28</td>
</tr>
<tr>
<td>Black students in Urban District</td>
<td>123</td>
<td>0.03</td>
<td>0</td>
<td>0.03</td>
</tr>
<tr>
<td>Hispanic students in Urban District</td>
<td>139</td>
<td>0.09</td>
<td>0.01</td>
<td>0.1</td>
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</table>
## 1999-2000 School Year

### 4th Grade WKCE mathematics Test

<table>
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<tr>
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<th>Total Enrolled</th>
<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>White students in Wisconsin Public Schools</td>
<td>51010</td>
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<td>0.36</td>
<td>0.81</td>
</tr>
<tr>
<td>Black students in Wisconsin Public Schools</td>
<td>7164</td>
<td>0.35</td>
<td>0.08</td>
<td>0.43</td>
</tr>
<tr>
<td>Hispanic students in Wisconsin Public Schools</td>
<td>2819</td>
<td>0.36</td>
<td>0.13</td>
<td>0.49</td>
</tr>
<tr>
<td>White students in Urban District</td>
<td>1123</td>
<td>0.44</td>
<td>0.38</td>
<td>0.82</td>
</tr>
<tr>
<td>Black students in Urban District</td>
<td>184</td>
<td>0.36</td>
<td>0.08</td>
<td>0.44</td>
</tr>
<tr>
<td>Hispanic students in Urban District</td>
<td>130</td>
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<td>0.52</td>
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</table>

### 8th Grade WKCE mathematics Test

<table>
<thead>
<tr>
<th></th>
<th>Total Enrolled</th>
<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
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<td>0.47</td>
</tr>
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<td>0.01</td>
<td>0.07</td>
</tr>
<tr>
<td>Hispanic students in Wisconsin Public Schools</td>
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<td>0.04</td>
<td>0.18</td>
</tr>
<tr>
<td>White students in Urban District</td>
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<td>0.26</td>
<td>0.17</td>
<td>0.43</td>
</tr>
<tr>
<td>Black students in Urban District</td>
<td>134</td>
<td>0.07</td>
<td>0.01</td>
<td>0.08</td>
</tr>
<tr>
<td>Hispanic students in Urban District</td>
<td>119</td>
<td>0.08</td>
<td>0.02</td>
<td>0.1</td>
</tr>
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</table>

### 10th grade WKCE mathematics Test

<table>
<thead>
<tr>
<th></th>
<th>Total Enrolled</th>
<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>White students in Wisconsin Public Schools</td>
<td>58066</td>
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<td>0.12</td>
<td>0.43</td>
</tr>
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<td>Black students in Wisconsin Public Schools</td>
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<td>0.01</td>
<td>0.07</td>
</tr>
<tr>
<td>Hispanic students in Wisconsin Public Schools</td>
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<td>0.11</td>
<td>0.02</td>
<td>0.13</td>
</tr>
<tr>
<td>White students in Urban District</td>
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<td>0.26</td>
</tr>
<tr>
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<td>0</td>
<td>0.09</td>
</tr>
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<td>Hispanic students in Urban District</td>
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</table>
### 2000-2001 School Year

#### 4th Grade WKCE mathematics Test

<table>
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<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
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<td>0.25</td>
<td>0.72</td>
</tr>
<tr>
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<td>0.05</td>
<td>0.32</td>
</tr>
<tr>
<td>Hispanic students in Wisconsin Public Schools</td>
<td>2973</td>
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<td>0.08</td>
<td>0.41</td>
</tr>
<tr>
<td>White students in Urban District</td>
<td>999</td>
<td>0.5</td>
<td>0.2</td>
<td>0.7</td>
</tr>
<tr>
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<td>0.33</td>
</tr>
<tr>
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<td>0.28</td>
<td>0.09</td>
<td>0.37</td>
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</table>

#### 8th Grade WKCE mathematics Test

<table>
<thead>
<tr>
<th></th>
<th>Total Enrolled</th>
<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
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<td>0.45</td>
</tr>
<tr>
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<td>0.05</td>
<td>0.01</td>
<td>0.06</td>
</tr>
<tr>
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<td>0.03</td>
<td>0.15</td>
</tr>
<tr>
<td>White students in Urban District</td>
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<td>0.24</td>
<td>0.15</td>
<td>0.39</td>
</tr>
<tr>
<td>Black students in Urban District</td>
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<td>0.02</td>
<td>0.1</td>
</tr>
<tr>
<td>Hispanic students in Urban District</td>
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</table>

#### 10th grade WKCE mathematics Test

<table>
<thead>
<tr>
<th></th>
<th>Total Enrolled</th>
<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>White students in Wisconsin Public Schools</td>
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</tr>
<tr>
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<td>5258</td>
<td>0.07</td>
<td>0.01</td>
<td>0.08</td>
</tr>
<tr>
<td>Hispanic students in Wisconsin Public Schools</td>
<td>2524</td>
<td>0.13</td>
<td>0.03</td>
<td>0.16</td>
</tr>
<tr>
<td>White students in Urban District</td>
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</tr>
<tr>
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<td>0.05</td>
<td>0</td>
<td>0.05</td>
</tr>
<tr>
<td>Hispanic students in Urban District</td>
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<td>0.08</td>
</tr>
</tbody>
</table>
### 4th Grade WKCE mathematics Test

<table>
<thead>
<tr>
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<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>White students in Wisconsin Public Schools</td>
<td>49411</td>
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<td>0.3</td>
<td>0.77</td>
</tr>
<tr>
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<td>0.29</td>
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</tr>
<tr>
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<td>0.33</td>
<td>0.09</td>
<td>0.42</td>
</tr>
<tr>
<td>White students in Urban District</td>
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<td>0.3</td>
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</tr>
<tr>
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<tr>
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<td>0.48</td>
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</table>

### 8th Grade WKCE mathematics Test

<table>
<thead>
<tr>
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<th>Total Enrolled</th>
<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>White students in Wisconsin Public Schools</td>
<td>53580</td>
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</tr>
<tr>
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<td>0.07</td>
</tr>
<tr>
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<td>0.04</td>
<td>0.17</td>
</tr>
<tr>
<td>White students in Urban District</td>
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<td>0.31</td>
<td>0.18</td>
<td>0.49</td>
</tr>
<tr>
<td>Black students in Urban District</td>
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<td>0.05</td>
<td>0.04</td>
<td>0.09</td>
</tr>
<tr>
<td>Hispanic students in Urban District</td>
<td>142</td>
<td>0.13</td>
<td>0.04</td>
<td>0.17</td>
</tr>
</tbody>
</table>

### 10th grade WKCE mathematics Test

<table>
<thead>
<tr>
<th></th>
<th>Total Enrolled</th>
<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>White students in Wisconsin Public Schools</td>
<td>59743</td>
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<td>0.18</td>
<td>0.48</td>
</tr>
<tr>
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<td>0.08</td>
</tr>
<tr>
<td>Hispanic students in Wisconsin Public Schools</td>
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<td>0.15</td>
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</tr>
<tr>
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<td>0.03</td>
<td>0.12</td>
</tr>
<tr>
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</tbody>
</table>
### 2002-2003 School Year

#### 4th Grade WKCE mathematics Test

<table>
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<th>Advanced</th>
<th>Prof. and Adv.</th>
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</thead>
<tbody>
<tr>
<td>White students in Wisconsin Public Schools</td>
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#### 8th Grade WKCE mathematics Test

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#### 10th grade WKCE mathematics Test

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## 2003-2004 School Year

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### 8th Grade WKCE mathematics Test

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### 10th grade WKCE mathematics Test

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### 2004-2005 School Year

#### 4th Grade WKCE mathematics Test

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#### 8th Grade WKCE mathematics Test

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#### 10th grade WKCE mathematics Test

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2005-2006 School Year

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### 2006-2007 School Year

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#### 8th Grade WKCE mathematics Test

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#### 10th grade WKCE mathematics Test

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<td>0.03</td>
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### 2007-2008 School Year

#### 4th Grade WKCE mathematics Test

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#### 8th Grade WKCE mathematics Test

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#### 10th grade WKCE mathematics Test

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<th>Total Enrolled</th>
<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
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<tbody>
<tr>
<td>White students in Wisconsin Public Schools</td>
<td>55171</td>
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<td>0.12</td>
<td>0.49</td>
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<td>Hispanic students in Wisconsin Public Schools</td>
<td>3832</td>
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</tr>
<tr>
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### 2008-2009 School Year

#### 4th Grade WKCE mathematics Test

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<th>% Proficient</th>
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<th>% Prof. and Adv.</th>
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<td>44637</td>
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<td>0.56</td>
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</tr>
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#### 8th Grade WKCE mathematics Test

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<th>Total Enrolled</th>
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<th>% Prof. and Adv.</th>
</tr>
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<tr>
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#### 10th grade WKCE mathematics Test

<table>
<thead>
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<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
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<td>0.07</td>
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<td>0.02</td>
<td>0.15</td>
</tr>
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<td>0.31</td>
<td>0.08</td>
<td>0.39</td>
</tr>
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<td>0.01</td>
<td>0.08</td>
</tr>
<tr>
<td>Hispanic students in Urban District</td>
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### 2009-2010 School Year

#### 4th Grade WKCE mathematics Test

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<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>White students in Wisconsin Public Schools</td>
<td>45368</td>
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<td>0.02</td>
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</tr>
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<td>0.03</td>
<td>0.31</td>
</tr>
<tr>
<td>White students in Urban District</td>
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#### 8th Grade WKCE mathematics Test

<table>
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<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>White students in Wisconsin Public Schools</td>
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<td>0.48</td>
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<td>0.01</td>
<td>0.13</td>
</tr>
<tr>
<td>Hispanic students in Wisconsin Public Schools</td>
<td>4555</td>
<td>0.19</td>
<td>0.03</td>
<td>0.22</td>
</tr>
<tr>
<td>White students in Urban District</td>
<td>933</td>
<td>0.36</td>
<td>0.16</td>
<td>0.52</td>
</tr>
<tr>
<td>Black students in Urban District</td>
<td>222</td>
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<td>0.03</td>
<td>0.16</td>
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<tr>
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#### 10th grade WKCE mathematics Test

<table>
<thead>
<tr>
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<th>Total Enrolled</th>
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<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>White students in Wisconsin Public Schools</td>
<td>52272</td>
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<td>0.47</td>
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<tr>
<td>Black students in Wisconsin Public Schools</td>
<td>6298</td>
<td>0.06</td>
<td>0.01</td>
<td>0.07</td>
</tr>
<tr>
<td>Hispanic students in Wisconsin Public Schools</td>
<td>4363</td>
<td>0.14</td>
<td>0.02</td>
<td>0.16</td>
</tr>
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<td>White students in Urban District</td>
<td>1023</td>
<td>0.31</td>
<td>0.08</td>
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</tr>
<tr>
<td>Black students in Urban District</td>
<td>239</td>
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2010-2011 School Year

### 4th Grade WKCE mathematics Test

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<th>% Advanced</th>
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</tr>
</thead>
<tbody>
<tr>
<td>White students in Wisconsin Public Schools</td>
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<td>0.02</td>
<td>0.19</td>
</tr>
<tr>
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<td>6222</td>
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<td>0.03</td>
<td>0.3</td>
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<td>0.11</td>
<td>0.58</td>
</tr>
<tr>
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<td>0.03</td>
<td>0.29</td>
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### 8th Grade WKCE mathematics Test

<table>
<thead>
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<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
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### 10th grade WKCE mathematics Test

<table>
<thead>
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<th></th>
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<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
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<td>0.06</td>
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</table>
### 2011-2012 School Year

<table>
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<th>% Proficient</th>
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<th>% Prof. and Adv.</th>
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</thead>
<tbody>
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<td>Hispanic students in Urban District</td>
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<td>Hispanic students in Urban District</td>
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</table>
2012-2013 School Year

<table>
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<tr>
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<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>White students in Wisconsin Public Schools</td>
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<td>0.56</td>
</tr>
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<td>0.02</td>
<td>0.19</td>
</tr>
<tr>
<td>Hispanic students in Wisconsin Public Schools</td>
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<td>0.03</td>
<td>0.3</td>
</tr>
<tr>
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<td>0.1</td>
<td>0.55</td>
</tr>
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<table>
<thead>
<tr>
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<th>Total Enrolled</th>
<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>White students in Wisconsin Public Schools</td>
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</tr>
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</tr>
<tr>
<td>Hispanic students in Urban District</td>
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<td>0.22</td>
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<table>
<thead>
<tr>
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<th>Total Enrolled</th>
<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>White students in Wisconsin Public Schools</td>
<td>48399</td>
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<td>0.12</td>
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</tr>
<tr>
<td>Black students in Wisconsin Public Schools</td>
<td>5891</td>
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<td>0.09</td>
<td>0.43</td>
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<td>0.07</td>
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</table>
# 2013-2014 School Year

## 4th Grade WKCE mathematics Test

<table>
<thead>
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<th>Total Enrolled</th>
<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>White students in Wisconsin Public Schools</td>
<td>43415</td>
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<td>0.12</td>
<td>0.6</td>
</tr>
<tr>
<td>Black students in Wisconsin Public Schools</td>
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<td>0.02</td>
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</tr>
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<td>Hispanic students in Wisconsin Public Schools</td>
<td>6762</td>
<td>0.28</td>
<td>0.03</td>
<td>0.31</td>
</tr>
<tr>
<td>White students in Urban District</td>
<td>725</td>
<td>0.46</td>
<td>0.1</td>
<td>0.56</td>
</tr>
<tr>
<td>Black students in Urban District</td>
<td>241</td>
<td>0.17</td>
<td>0.01</td>
<td>0.18</td>
</tr>
<tr>
<td>Hispanic students in Urban District</td>
<td>399</td>
<td>0.24</td>
<td>0.02</td>
<td>0.26</td>
</tr>
</tbody>
</table>

## 8th Grade WKCE mathematics Test

<table>
<thead>
<tr>
<th></th>
<th>Total Enrolled</th>
<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>White students in Wisconsin Public Schools</td>
<td>45676</td>
<td>0.4</td>
<td>0.14</td>
<td>0.54</td>
</tr>
<tr>
<td>Black students in Wisconsin Public Schools</td>
<td>6527</td>
<td>0.13</td>
<td>0.02</td>
<td>0.15</td>
</tr>
<tr>
<td>Hispanic students in Wisconsin Public Schools</td>
<td>5911</td>
<td>0.21</td>
<td>0.03</td>
<td>0.24</td>
</tr>
<tr>
<td>White students in Urban District</td>
<td>864</td>
<td>0.35</td>
<td>0.12</td>
<td>0.47</td>
</tr>
<tr>
<td>Black students in Urban District</td>
<td>284</td>
<td>0.09</td>
<td>0.02</td>
<td>0.11</td>
</tr>
<tr>
<td>Hispanic students in Urban District</td>
<td>375</td>
<td>0.21</td>
<td>0.03</td>
<td>0.24</td>
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</table>

## 10th grade WKCE mathematics Test

<table>
<thead>
<tr>
<th></th>
<th>Total Enrolled</th>
<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>White students in Wisconsin Public Schools</td>
<td>48007</td>
<td>0.39</td>
<td>0.14</td>
<td>0.53</td>
</tr>
<tr>
<td>Black students in Wisconsin Public Schools</td>
<td>6240</td>
<td>0.1</td>
<td>0.01</td>
<td>0.11</td>
</tr>
<tr>
<td>Hispanic students in Wisconsin Public Schools</td>
<td>5505</td>
<td>0.2</td>
<td>0.03</td>
<td>0.23</td>
</tr>
<tr>
<td>White students in Urban District</td>
<td>912</td>
<td>0.37</td>
<td>0.1</td>
<td>0.47</td>
</tr>
<tr>
<td>Black students in Urban District</td>
<td>227</td>
<td>0.1</td>
<td>0.01</td>
<td>0.11</td>
</tr>
<tr>
<td>Hispanic students in Urban District</td>
<td>301</td>
<td>0.17</td>
<td>0.02</td>
<td>0.19</td>
</tr>
</tbody>
</table>
Appendix AB: 4th Grade Ethnicities Performance Graphs

Wisconsin and Urban District

4th grade Wisconsin Ethnic Performance

4th grade Urban District Ethnic Performance
Appendix AC: 8th Grade Ethnicities Performance Graphs

Wisconsin and Urban District

8th grade Wisconsin Ethnic Performance

8th grade Urban District Ethnic Performance
Appendix AD: 10th Grade Ethnicities Performance Graphs

Wisconsin and Urban District

10th grade Wisconsin Ethnic Performance

[Graph showing ethnic performance percentages for Wisconsin from 1997-98 to 2013-14 for White, Black, and Hispanic students, including percentages of proficient and advanced performance.

10th grade Urban District Ethnic Performance

[Graph showing ethnic performance percentages for Urban District from 1997-98 to 2013-14 for White, Black, and Hispanic students, including percentages of proficient and advanced performance.]
### 4th Grade Ethnicity Comparison Tables

#### Wisconsin (4th grd)

<table>
<thead>
<tr>
<th>Year</th>
<th>White % Prof. &amp; Adv.</th>
<th>Black % Prof. &amp; Adv.</th>
<th>Hispanic % Prof. &amp; Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998-99</td>
<td>0.81</td>
<td>0.41</td>
<td>0.49</td>
</tr>
<tr>
<td>1999-00</td>
<td>0.81</td>
<td>0.43</td>
<td>0.49</td>
</tr>
<tr>
<td>2000-01</td>
<td>0.72</td>
<td>0.32</td>
<td>0.41</td>
</tr>
<tr>
<td>2001-02</td>
<td>0.77</td>
<td>0.36</td>
<td>0.42</td>
</tr>
<tr>
<td>2002-03</td>
<td>0.76</td>
<td>0.41</td>
<td>0.51</td>
</tr>
<tr>
<td>2003-04</td>
<td>0.80</td>
<td>0.45</td>
<td>0.53</td>
</tr>
<tr>
<td>2004-05</td>
<td>0.78</td>
<td>0.47</td>
<td>0.60</td>
</tr>
<tr>
<td>2005-06</td>
<td>0.79</td>
<td>0.47</td>
<td>0.61</td>
</tr>
<tr>
<td>2006-07</td>
<td>0.83</td>
<td>0.54</td>
<td>0.72</td>
</tr>
<tr>
<td>2007-08</td>
<td>0.50</td>
<td>0.22</td>
<td>0.25</td>
</tr>
<tr>
<td>2008-09</td>
<td>0.59</td>
<td>0.22</td>
<td>0.29</td>
</tr>
<tr>
<td>2009-10</td>
<td>0.62</td>
<td>0.21</td>
<td>0.31</td>
</tr>
<tr>
<td>2010-11</td>
<td>0.58</td>
<td>0.29</td>
<td>0.36</td>
</tr>
<tr>
<td>2011-12</td>
<td>0.60</td>
<td>0.24</td>
<td>0.33</td>
</tr>
<tr>
<td>2012-13</td>
<td>0.55</td>
<td>0.23</td>
<td>0.33</td>
</tr>
<tr>
<td>2013-14</td>
<td>0.56</td>
<td>0.18</td>
<td>0.26</td>
</tr>
</tbody>
</table>

#### Urban District (4th grd)

<table>
<thead>
<tr>
<th>Year</th>
<th>White % Prof. &amp; Adv.</th>
<th>Black % Prof. &amp; Adv.</th>
<th>Hispanic % Prof. &amp; Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998-99</td>
<td>0.79</td>
<td>0.39</td>
<td>0.49</td>
</tr>
<tr>
<td>1999-00</td>
<td>0.82</td>
<td>0.44</td>
<td>0.52</td>
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<tr>
<td>2000-01</td>
<td>0.70</td>
<td>0.33</td>
<td>0.37</td>
</tr>
<tr>
<td>2001-02</td>
<td>0.79</td>
<td>0.40</td>
<td>0.48</td>
</tr>
<tr>
<td>2002-03</td>
<td>0.76</td>
<td>0.47</td>
<td>0.53</td>
</tr>
<tr>
<td>2003-04</td>
<td>0.77</td>
<td>0.47</td>
<td>0.60</td>
</tr>
<tr>
<td>2004-05</td>
<td>0.77</td>
<td>0.37</td>
<td>0.25</td>
</tr>
<tr>
<td>2005-06</td>
<td>0.84</td>
<td>0.54</td>
<td>0.72</td>
</tr>
<tr>
<td>2006-07</td>
<td>0.51</td>
<td>0.22</td>
<td>0.29</td>
</tr>
<tr>
<td>2007-08</td>
<td>0.59</td>
<td>0.22</td>
<td>0.35</td>
</tr>
<tr>
<td>2008-09</td>
<td>0.62</td>
<td>0.21</td>
<td>0.38</td>
</tr>
<tr>
<td>2009-10</td>
<td>0.58</td>
<td>0.29</td>
<td>0.36</td>
</tr>
<tr>
<td>2010-11</td>
<td>0.59</td>
<td>0.24</td>
<td>0.33</td>
</tr>
<tr>
<td>2011-12</td>
<td>0.55</td>
<td>0.23</td>
<td>0.33</td>
</tr>
<tr>
<td>2012-13</td>
<td>0.56</td>
<td>0.19</td>
<td>0.26</td>
</tr>
</tbody>
</table>

Note: The tables above compare the percentage of students proficient and advanced in reading for white, black, and Hispanic students in Wisconsin and urban districts over the years specified.
Appendix AF: 4th grade t-stat of WI White vs. Black for Appendix AE

**t-Test: Paired Two Sample for Means**
H0: \( \mu(\text{Wis. White}) \geq \mu(\text{Wis. Black}) \)
H1: \( \mu(\text{Wis. White}) < \mu(\text{Wis. Black}) \)

**Wisconsin 4th grade White vs. Black**

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sample size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>0.81</td>
<td>15</td>
<td>0.68067</td>
<td>0.11738</td>
</tr>
<tr>
<td>Black</td>
<td>0.41</td>
<td>15</td>
<td>0.30467</td>
<td>0.11064</td>
</tr>
</tbody>
</table>

**Paired two-sample t-test**

- Degrees of Freedom: 14
- Hypothesized Mean Difference: 0.
- Pooled Variance: 0.01301
- Test Statistics: 63.51241
- Pearson Correlation Coefficient: 0.98151

**Two-tailed distribution**

- \( p \)-level: 0.0
- Critical Value (5%): 2.14479

**One-tailed distribution**

- \( p \)-level: 0.0
- Critical Value (5%): -1.76131
Appendix AG: 4th grade t-stat of WI White vs. Hispanic for Appendix AE

t-Test: Paired Two Sample for Means
H0: \( \mu(\text{Wis. White}) \geq \mu(\text{Wis. Hispanic}) \)
H1: \( \mu(\text{Wis. White}) < \mu(\text{Wis. Hispanic}) \)

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sample size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.81</td>
<td>15</td>
<td>0.68067</td>
<td>0.11738</td>
<td>0.01378</td>
</tr>
<tr>
<td>0.49</td>
<td>15</td>
<td>0.40333</td>
<td>0.11191</td>
<td>0.01252</td>
</tr>
</tbody>
</table>

Paired two-sample t-test

<table>
<thead>
<tr>
<th>Degrees of Freedom</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesized Mean Difference</td>
<td>0</td>
</tr>
<tr>
<td>Pooled Variance</td>
<td>0.01315</td>
</tr>
<tr>
<td>Test Statistics</td>
<td>32.93182</td>
</tr>
<tr>
<td>Pearson Correlation Coefficient</td>
<td>0.96065</td>
</tr>
</tbody>
</table>

Two-tailed distribution

| p-level | Critical Value (5%) | 2.14479 |

One-tailed distribution

| p-level | Critical Value (5%) | -1.76131 |
t-Test: Paired Two Sample for Means
H0: \( \mu(\text{Wis. Black}) \geq \mu(\text{Wis. Hispanic}) \)
H1: \( \mu(\text{Wis. Black}) < \mu(\text{Wis. Hispanic}) \)

Wisconsin 4th grade Black vs. Hispanic

Descriptive Statistics

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sample size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.41</td>
<td>15</td>
<td>0.30467</td>
<td>0.11064</td>
<td>0.01224</td>
</tr>
<tr>
<td>0.49</td>
<td>15</td>
<td>0.40333</td>
<td>0.11191</td>
<td>0.01252</td>
</tr>
</tbody>
</table>

Paired two-sample t-test

<table>
<thead>
<tr>
<th>Degrees of Freedom</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesized Mean Difference</td>
<td>0.0</td>
</tr>
<tr>
<td>Pooled Variance</td>
<td>0.01238</td>
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<tr>
<td>Test Statistics</td>
<td>-15.44206</td>
</tr>
<tr>
<td>Pearson Correlation Coefficient</td>
<td>0.97534</td>
</tr>
</tbody>
</table>

Two-tailed distribution

| p-level  | 3.46351E-10 | Critical Value (5%) | 2.14479 |

One-tailed distribution

| p-level  | 1.73175E-10 | Critical Value (5%) | -1.76131 |
Appendix AI: 4th grade t-stat of Urban District White vs. Black for Appendix AE

t-Test: Paired Two Sample for Means
H0: μ(Urb D. White) ≥ μ(Urb D. Black)
H1: μ(Urb D. White) < μ(Urb D. Black)

Urban District 4th grade White vs. Black

<table>
<thead>
<tr>
<th>Descriptive Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VAR</strong></td>
</tr>
<tr>
<td>0.79</td>
</tr>
<tr>
<td>0.39</td>
</tr>
</tbody>
</table>

Paired two-sample t-test

<table>
<thead>
<tr>
<th>Degrees of Freedom</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesized Mean Difference</td>
<td>0.01347</td>
</tr>
<tr>
<td>Test Statistics</td>
<td>30.42432</td>
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<tr>
<td>Pearson Correlation Coefficient</td>
<td>0.92856</td>
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</table>

Two-tailed distribution

<table>
<thead>
<tr>
<th>p-level</th>
<th>Critical Value (5%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.01347</td>
<td>2.14479</td>
</tr>
</tbody>
</table>

One-tailed distribution

<table>
<thead>
<tr>
<th>p-level</th>
<th>Critical Value (5%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.01347</td>
<td>-1.76131</td>
</tr>
</tbody>
</table>
Appendix AJ: 4th grade t-stat of Urban White vs. Hispanic for Appendix AE

**t-Test: Paired Two Sample for Means**

H0: \( \mu(\text{Urb D. White}) \geq \mu(\text{Urb D. Hispanic}) \)

H1: \( \mu(\text{Urb D. White}) < \mu(\text{Urb D. Hispanic}) \)

**Urban District 4th grade White vs. Hispanic**

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sample size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.79</td>
<td>15</td>
<td>0.68267</td>
<td>0.11405</td>
<td>0.01301</td>
</tr>
<tr>
<td>0.49</td>
<td>15</td>
<td>0.43533</td>
<td>0.128</td>
<td>0.01638</td>
</tr>
</tbody>
</table>

**Paired two-sample t-test**

- Degrees of Freedom: 14
- Hypothesized Mean Difference: 0
- Pooled Variance: 0.0147
- Test Statistics: 17.22589
- Pearson Correlation Coefficient: 0.90075

**Two-tailed distribution**

<table>
<thead>
<tr>
<th>p-level</th>
<th>Critical Value (5%)</th>
<th>2.14479</th>
</tr>
</thead>
</table>

**One-tailed distribution**

<table>
<thead>
<tr>
<th>p-level</th>
<th>Critical Value (5%)</th>
<th>-1.76131</th>
</tr>
</thead>
</table>
t-Test: Paired Two Sample for Means
H0: \( \mu(\text{Urb D. Black}) \geq \mu(\text{Urb D. Hispanic}) \)
H1: \( \mu(\text{Urb D. Black}) < \mu(\text{Urb D. Hispanic}) \)

**Urban District 4th grade Black vs. Hispanic**

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sample size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.39</td>
<td>15</td>
<td>0.3367</td>
<td>0.11806</td>
<td>0.01394</td>
</tr>
<tr>
<td>0.49</td>
<td>15</td>
<td>0.4353</td>
<td>0.128</td>
<td>0.01638</td>
</tr>
</tbody>
</table>

**Paired two-sample t-test**

<table>
<thead>
<tr>
<th>Degrees of Freedom</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesized Mean Difference</td>
<td>0.0</td>
</tr>
<tr>
<td>Pooled Variance</td>
<td>0.01516</td>
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<td>Test Statistics</td>
<td>-8.94101</td>
</tr>
<tr>
<td>Pearson Correlation Coefficient</td>
<td>0.94283</td>
</tr>
</tbody>
</table>

**Two-tailed distribution**

| p-level | 3.66788E-7 | Critical Value (5%) | 2.14479 |

**One-tailed distribution**

<p>| p-level | 1.83394E-7 | Critical Value (5%) | -1.76131 |</p>
<table>
<thead>
<tr>
<th>Year</th>
<th>White</th>
<th>Black</th>
<th>Hispanic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998:99</td>
<td>0.48</td>
<td>0.07</td>
<td>0.42</td>
</tr>
<tr>
<td>1999:00</td>
<td>0.47</td>
<td>0.07</td>
<td>0.43</td>
</tr>
<tr>
<td>2000:01</td>
<td>0.45</td>
<td>0.06</td>
<td>0.39</td>
</tr>
<tr>
<td>2001:02</td>
<td>0.51</td>
<td>0.07</td>
<td>0.49</td>
</tr>
<tr>
<td>2002:03</td>
<td>0.81</td>
<td>0.3</td>
<td>0.76</td>
</tr>
<tr>
<td>2003:04</td>
<td>0.83</td>
<td>0.24</td>
<td>0.68</td>
</tr>
<tr>
<td>2004:05</td>
<td>0.81</td>
<td>0.31</td>
<td>0.79</td>
</tr>
<tr>
<td>2005:06</td>
<td>0.81</td>
<td>0.36</td>
<td>0.82</td>
</tr>
<tr>
<td>2006:07</td>
<td>0.81</td>
<td>0.37</td>
<td>0.71</td>
</tr>
<tr>
<td>2007:08</td>
<td>0.45</td>
<td>0.09</td>
<td>0.43</td>
</tr>
<tr>
<td>2008:09</td>
<td>0.49</td>
<td>0.11</td>
<td>0.51</td>
</tr>
<tr>
<td>2009:10</td>
<td>0.48</td>
<td>0.13</td>
<td>0.52</td>
</tr>
<tr>
<td>2010:11</td>
<td>0.51</td>
<td>0.14</td>
<td>0.56</td>
</tr>
<tr>
<td>2011:12</td>
<td>0.51</td>
<td>0.14</td>
<td>0.54</td>
</tr>
<tr>
<td>2012:13</td>
<td>0.54</td>
<td>0.15</td>
<td>0.47</td>
</tr>
<tr>
<td>2013:14</td>
<td>0.52</td>
<td>0.15</td>
<td>0.48</td>
</tr>
</tbody>
</table>
Appendix AM: 8th grade t-stat of WI White vs. Black for Appendix AL

**t-Test: Paired Two Sample for Means**

H0: $\mu(\text{Wis. White}) \geq \mu(\text{Wis. Black})$

H1: $\mu(\text{Wis. White}) < \mu(\text{Wis. Black})$

### Wisconsin 8th grade White vs. Black

#### Descriptive Statistics

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sample size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.48</td>
<td>15</td>
<td>0.6</td>
<td>0.15856</td>
<td>0.02514</td>
</tr>
<tr>
<td>0.07</td>
<td>15</td>
<td>0.178</td>
<td>0.10825</td>
<td>0.01172</td>
</tr>
</tbody>
</table>

**Paired two-sample t-test**

<table>
<thead>
<tr>
<th>Degrees of Freedom</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesized Mean Difference</td>
<td>0.01843</td>
</tr>
<tr>
<td>Test Statistics</td>
<td>24.31791</td>
</tr>
<tr>
<td>Pearson Correlation Coefficient</td>
<td>0.94217</td>
</tr>
</tbody>
</table>

**Two-tailed distribution**

<table>
<thead>
<tr>
<th>p-level</th>
<th>Critical Value (5%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.000</td>
<td>2.14479</td>
</tr>
</tbody>
</table>

**One-tailed distribution**

<table>
<thead>
<tr>
<th>p-level</th>
<th>Critical Value (5%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.000</td>
<td>-1.76131</td>
</tr>
</tbody>
</table>
### Appendix AN: 8th grade t-stat of WI White vs. Hispanic for Appendix AL

**t-Test: Paired Two Sample for Means**

H0: \( \mu(\text{Wis. White}) \geq \mu(\text{Wis. Hispanic}) \)

H1: \( \mu(\text{Wis. White}) < \mu(\text{Wis. Hispanic}) \)

**Wisconsin 8th grade White vs. Hispanic**

**Descriptive Statistics**

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sample size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.48</td>
<td>15</td>
<td>0.6</td>
<td>0.15856</td>
<td>0.02514</td>
</tr>
<tr>
<td>0.17</td>
<td>15</td>
<td>0.286</td>
<td>0.14686</td>
<td>0.02157</td>
</tr>
</tbody>
</table>

**Paired two-sample t-test**

<table>
<thead>
<tr>
<th>Degrees of Freedom</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesized Mean Difference</td>
<td>0.0</td>
</tr>
<tr>
<td>Pooled Variance</td>
<td>0.02336</td>
</tr>
<tr>
<td>Test Statistics</td>
<td>22.87764</td>
</tr>
<tr>
<td>Pearson Correlation Coefficient</td>
<td>0.94227</td>
</tr>
</tbody>
</table>

**Two-tailed distribution**

| p-level | 1.72594E-12 | Critical Value (5%) | 2.14479 |

**One-tailed distribution**

| p-level | 0. | Critical Value (5%) | -1.76131 |
Appendix AO: 8th grade t-stat of WI Black vs. Hispanic for Appendix AL

t-Test: Paired Two Sample for Means
H0: \( \mu(\text{Wis. Black}) \geq \mu(\text{Wis. Hispanic}) \)
H1: \( \mu(\text{Wis. Black}) < \mu(\text{Wis. Hispanic}) \)

**Wisconsin 8th grade Black vs. Hispanic**

<table>
<thead>
<tr>
<th>Descriptive Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VAR</strong></td>
</tr>
<tr>
<td>0.07</td>
</tr>
<tr>
<td>0.17</td>
</tr>
</tbody>
</table>

**Paired two-sample t-test**

<table>
<thead>
<tr>
<th>Degrees of Freedom</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesized Mean Difference</td>
<td>0.</td>
</tr>
<tr>
<td>Pooled Variance</td>
<td>0.01664</td>
</tr>
<tr>
<td>Test Statistics</td>
<td>-8.58426</td>
</tr>
<tr>
<td>Pearson Correlation Coefficient</td>
<td>0.97223</td>
</tr>
</tbody>
</table>

**Two-tailed distribution**

| p-level | 5.972E-7 | Critical Value (5%) | 2.14479 |

**One-tailed distribution**

| p-level | 2.98607E-7 | Critical Value (5%) | -1.76131 |
Appendix AP: 8th grade t-stat of Urban District White vs. Black for Appendix AL

Hypothetical Paired Two Sample for Means
H0: $\mu(\text{Urb D. White}) \geq \mu(\text{Urb D. Black})$
H1: $\mu(\text{Urb D. White}) < \mu(\text{Urb D. Black})$

Urban District 8th grade White vs. Black

Descriptive Statistics

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sample size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.42</td>
<td>15</td>
<td>0.572</td>
<td>0.14189</td>
<td>0.02013</td>
</tr>
<tr>
<td>0.04</td>
<td>15</td>
<td>0.20533</td>
<td>0.12806</td>
<td>0.0164</td>
</tr>
</tbody>
</table>

Paired two-sample t-test

<table>
<thead>
<tr>
<th>Degrees of Freedom</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesized Mean Difference</td>
<td>0.</td>
</tr>
<tr>
<td>Pooled Variance</td>
<td>0.01826</td>
</tr>
<tr>
<td>Test Statistics</td>
<td>32.62009</td>
</tr>
<tr>
<td>Pearson Correlation Coefficient</td>
<td>0.95311</td>
</tr>
</tbody>
</table>

Two-tailed distribution

| p-level | Critical Value (5%) | 2.14479 |

One-tailed distribution

| p-level | Critical Value (5%) | -1.76131 |
Appendix AQ: 8th grade t-stat of Urban District White vs. Hispanic for Appendix AL

\[ t\text{-Test: Paired Two Sample for Means} \]
\[ H_0: \mu((\text{Urb D. White}) \geq \mu((\text{Urb D. Hispanic})) \]
\[ H_1: \mu((\text{Urb D. White}) < \mu((\text{Urb D. Hispanic})) \]

**Urban District 8th grade White vs. Hispanic**

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sample size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.42</td>
<td>15</td>
<td>0.572</td>
<td>0.14189</td>
<td>0.02013</td>
</tr>
<tr>
<td>0.11</td>
<td>15</td>
<td>0.28733</td>
<td>0.16109</td>
<td>0.02595</td>
</tr>
</tbody>
</table>

**Paired two-sample t-test**

- Degrees of Freedom: 14
- Hypothesized Mean Difference: 0
- Pooled Variance: 0.02304
- Test Statistics: 22.92728
- Pearson Correlation Coefficient: 0.95748

**Two-tailed distribution**

<table>
<thead>
<tr>
<th>p-level</th>
<th>Critical Value (5%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.67559E-12</td>
<td>2.14479</td>
</tr>
</tbody>
</table>

**One-tailed distribution**

<table>
<thead>
<tr>
<th>p-level</th>
<th>Critical Value (5%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.</td>
<td>-1.76131</td>
</tr>
</tbody>
</table>
Appendix AR: 8th grade t-stat of Urban District Black vs. Hispanic for Appendix AL

t-Test: Paired Two Sample for Means
H0: \( \mu(\text{Urb D. Black}) \geq \mu(\text{Urb D. Hispanic}) \)
H1: \( \mu(\text{Urb D. Black}) < \mu(\text{Urb D. Hispanic}) \)

### Urban District 8th grade Black vs. Hispanic

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sample size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.04</td>
<td>15</td>
<td>0.20533</td>
<td>0.12806</td>
<td>0.0164</td>
</tr>
<tr>
<td>0.11</td>
<td>15</td>
<td>0.28733</td>
<td>0.16109</td>
<td>0.02595</td>
</tr>
</tbody>
</table>

#### Paired two-sample t-test

- Degrees of Freedom: 14
- Hypothesized Mean Difference: 0.
- Pooled Variance: 0.02117
- Test Statistics: -5.3991
- Pearson Correlation Coefficient: 0.94258

#### Two-tailed distribution

- p-level: 0.00009
- Critical Value (5%): 2.14479

#### One-tailed distribution

- p-level: 0.00005
- Critical Value (5%): -1.76131
### Table 1: 10th Grade Ethnicity Comparison Tables

<table>
<thead>
<tr>
<th>Year</th>
<th>Black%</th>
<th>Hispanic%</th>
<th>White%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998-99</td>
<td>0.10</td>
<td>0.05</td>
<td>0.85</td>
</tr>
<tr>
<td>1999-00</td>
<td>0.11</td>
<td>0.03</td>
<td>0.87</td>
</tr>
<tr>
<td>2000-01</td>
<td>0.15</td>
<td>0.06</td>
<td>0.79</td>
</tr>
<tr>
<td>2001-02</td>
<td>0.16</td>
<td>0.08</td>
<td>0.76</td>
</tr>
<tr>
<td>2002-03</td>
<td>0.14</td>
<td>0.09</td>
<td>0.78</td>
</tr>
<tr>
<td>2003-04</td>
<td>0.15</td>
<td>0.08</td>
<td>0.77</td>
</tr>
<tr>
<td>2004-05</td>
<td>0.18</td>
<td>0.09</td>
<td>0.71</td>
</tr>
<tr>
<td>2005-06</td>
<td>0.19</td>
<td>0.09</td>
<td>0.68</td>
</tr>
<tr>
<td>2006-07</td>
<td>0.18</td>
<td>0.07</td>
<td>0.78</td>
</tr>
<tr>
<td>2007-08</td>
<td>0.19</td>
<td>0.11</td>
<td>0.69</td>
</tr>
<tr>
<td>2008-09</td>
<td>0.18</td>
<td>0.10</td>
<td>0.71</td>
</tr>
<tr>
<td>2009-10</td>
<td>0.18</td>
<td>0.10</td>
<td>0.70</td>
</tr>
<tr>
<td>2010-11</td>
<td>0.18</td>
<td>0.10</td>
<td>0.69</td>
</tr>
<tr>
<td>2011-12</td>
<td>0.18</td>
<td>0.11</td>
<td>0.69</td>
</tr>
<tr>
<td>2012-13</td>
<td>0.19</td>
<td>0.11</td>
<td>0.68</td>
</tr>
<tr>
<td>2013-14</td>
<td>0.19</td>
<td>0.12</td>
<td>0.69</td>
</tr>
</tbody>
</table>

### Notes
- The data above reflects changes in ethnic composition over time, highlighting the effectiveness of various interventions in closing the achievement gap among different ethnic groups.
- The table includes data from 1998-99 to 2013-14, with years marked as 2000-01, 2001-02, etc.
- Black% refers to the percentage of the black population, Hispanic% to the Hispanic population, and White% to the white population in each respective year.
t-Test: Paired Two Sample for Means
H0: \( \mu(\text{Wis. White}) \geq \mu(\text{Wis. Black}) \)
H1: \( \mu(\text{Wis. White}) < \mu(\text{Wis. Black}) \)

### Wisconsin 10th grade White vs. Black

#### Descriptive Statistics

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sample size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.43</td>
<td>15</td>
<td>0.582</td>
<td>0.01414</td>
<td>0.01999</td>
</tr>
<tr>
<td>0.06</td>
<td>15</td>
<td>0.13667</td>
<td>0.07979</td>
<td>0.00637</td>
</tr>
</tbody>
</table>

#### Paired two-sample t-test

- Degrees of Freedom: 14
- Hypothesized Mean Difference: 0
- Pooled Variance: 0.01318
- Test Statistics: 27.27748
- Pearson Correlation Coefficient: 0.99085

#### Two-tailed distribution

<table>
<thead>
<tr>
<th>p-level</th>
<th>Critical Value (5%)</th>
<th>2.14479</th>
</tr>
</thead>
</table>

#### One-tailed distribution

<table>
<thead>
<tr>
<th>p-level</th>
<th>Critical Value (5%)</th>
<th>-1.76131</th>
</tr>
</thead>
</table>
Appendix AU: 10th grade t-stat of WI White vs. Hispanic for Appendix AS

**t-Test: Paired Two Sample for Means**
H0: \( \mu(\text{Wis. White}) \geq \mu(\text{Wis. Hispanic}) \)
H1: \( \mu(\text{Wis. White}) < \mu(\text{Wis. Hispanic}) \)

### Wisconsin 10th grade White vs. Hispanic

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sample size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.43</td>
<td>15</td>
<td>0.582</td>
<td>0.14138</td>
<td>0.01999</td>
</tr>
<tr>
<td>0.15</td>
<td>15</td>
<td>0.248</td>
<td>0.11608</td>
<td>0.01347</td>
</tr>
</tbody>
</table>

**Paired two-sample t-test**

<table>
<thead>
<tr>
<th>Degrees of Freedom</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesized Mean Difference</td>
<td>0.01673</td>
</tr>
<tr>
<td>Test Statistics</td>
<td>40.39047</td>
</tr>
<tr>
<td>Pearson Correlation Coefficient</td>
<td>0.98825</td>
</tr>
</tbody>
</table>

**Two-tailed distribution**

| p-level | 0. Critical Value (5%) | 2.14479 |

**One-tailed distribution**

| p-level | 0. Critical Value (5%) | -1.76131 |
Appendix AV: 10th grade t-stat of WI Black vs. Hispanic for Appendix AS

t-Test: Paired Two Sample for Means
H0: μ(Wis. Black) ≥ μ(Wis. Hispanic)
H1: μ(Wis. Black) < μ(Wis. Hispanic)

Wisconsin 10th grade Black vs. Hispanic

Descriptive Statistics

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sample size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.06</td>
<td>15</td>
<td>0.13667</td>
<td>0.07979</td>
<td>0.00637</td>
</tr>
<tr>
<td>0.15</td>
<td>15</td>
<td>0.248</td>
<td>0.11608</td>
<td>0.01347</td>
</tr>
</tbody>
</table>

Paired two-sample t-test

<table>
<thead>
<tr>
<th>Degrees of Freedom</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesized Mean Difference</td>
<td>0.</td>
</tr>
<tr>
<td>Pooled Variance</td>
<td>0.00992</td>
</tr>
<tr>
<td>Test Statistics</td>
<td>-11.19391</td>
</tr>
<tr>
<td>Pearson Correlation Coefficient</td>
<td>0.99098</td>
</tr>
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</table>

Two-tailed distribution

<table>
<thead>
<tr>
<th>p-level</th>
<th>Critical Value (5%)</th>
<th>2.14479</th>
</tr>
</thead>
</table>

One-tailed distribution

<table>
<thead>
<tr>
<th>p-level</th>
<th>Critical Value (5%)</th>
<th>-1.76131</th>
</tr>
</thead>
</table>
Appendix AW: 10th grade t-stat of Urban District White vs. Black for Appendix AS

t-Test: Paired Two Sample for Means
H0: \( \mu_{(\text{Urban D. White})} \geq \mu_{(\text{Urban D. Black})} \)
H1: \( \mu_{(\text{Urban D. White})} < \mu_{(\text{Urban D. Black})} \)

<table>
<thead>
<tr>
<th>Urban District 10th grade White vs. Black</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Descriptive Statistics</strong></td>
</tr>
<tr>
<td><strong>VAR</strong></td>
</tr>
<tr>
<td>0.28</td>
</tr>
<tr>
<td>0.03</td>
</tr>
</tbody>
</table>

**Paired two-sample t-test**

<table>
<thead>
<tr>
<th><strong>Degrees of Freedom</strong></th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hypothesized Mean Difference</strong></td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Pooled Variance</strong></td>
<td>0.02221</td>
</tr>
<tr>
<td><strong>Test Statistics</strong></td>
<td>19.81866</td>
</tr>
<tr>
<td><strong>Pearson Correlation Coefficient</strong></td>
<td>0.91843</td>
</tr>
</tbody>
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**Two-tailed distribution**

<table>
<thead>
<tr>
<th><strong>p-level</strong></th>
<th>1.21662E-11</th>
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</thead>
<tbody>
<tr>
<td><strong>Critical Value (5%)</strong></td>
<td>2.14479</td>
</tr>
</tbody>
</table>

**One-tailed distribution**

<table>
<thead>
<tr>
<th><strong>p-level</strong></th>
<th>6.08308E-12</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Critical Value (5%)</strong></td>
<td>-1.76131</td>
</tr>
</tbody>
</table>
Appendix AX: 10th grade t-stat of Urban District White vs. Hispanic for Appendix AS

**t-Test: Paired Two Sample for Means**

H0: \( \mu(\text{Urb D. White}) \geq \mu(\text{Urb D. Hispanic}) \)

H1: \( \mu(\text{Urb D. White}) < \mu(\text{Urb D. Hispanic}) \)

### Urban District 10th grade White vs. Hispanic

#### Descriptive Statistics

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sample Size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>15</td>
<td>0.50133</td>
<td>0.16208</td>
<td>0.02627</td>
</tr>
<tr>
<td>Hispanic</td>
<td>15</td>
<td>0.24733</td>
<td>0.17161</td>
<td>0.02945</td>
</tr>
</tbody>
</table>

#### Paired two-sample t-test

- **Degrees of Freedom**: 14
- **Hypothesized Mean Difference**: 0
- **Pooled Variance**: 0.02786
- **Test Statistics**: 28.95494
- **Pearson Correlation Coefficient**: 0.98088

#### Two-tailed distribution

- **p-level**: 0
- **Critical Value (5%)**: 2.14479

#### One-tailed distribution

- **p-level**: 0
- **Critical Value (5%)**: -1.76131
Appendix AY: 10th grade t-stat of Urban District Black vs. Hispanic for Appendix AS

t-Test: Paired Two Sample for Means
H0: μ(Urb D. Black) ≥ μ(Urb D. Hispanic)
H1: μ(Urb D. Black) < μ(Urb D. Hispanic)

<table>
<thead>
<tr>
<th>Description</th>
<th>0.03</th>
<th>0.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample size</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Mean</td>
<td>0.16533</td>
<td>0.24733</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.13469</td>
<td>0.17161</td>
</tr>
<tr>
<td>Variance</td>
<td>0.01814</td>
<td>0.02945</td>
</tr>
</tbody>
</table>

Urban District 10th grade Black vs. Hispanic

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sample size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.03</td>
<td>15</td>
<td>0.16533</td>
<td>0.13469</td>
<td>0.01814</td>
</tr>
<tr>
<td>0.1</td>
<td>15</td>
<td>0.24733</td>
<td>0.17161</td>
<td>0.02945</td>
</tr>
</tbody>
</table>

Paired two-sample t-test

Degrees of Freedom | 14
Hypothesized Mean Difference | 0.
Pooled Variance | 0.0238
Test Statistics | -5.4442
Pearson Correlation Coefficient | 0.95588

Two-tailed distribution

<table>
<thead>
<tr>
<th>p-level</th>
<th>Critical Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00009</td>
<td>(5%) 2.14479</td>
</tr>
</tbody>
</table>

One-tailed distribution

<table>
<thead>
<tr>
<th>p-level</th>
<th>Critical Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0004</td>
<td>(5%) -1.76131</td>
</tr>
</tbody>
</table>
Appendix AZ: WKCE Proficient and Advanced Percentiles

Grades 4, 8, and 10 for Disabled and Non-Disabled

1997-1998 School Year

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>Test Subject</th>
<th>Total Enrolled</th>
<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4th Grade</td>
<td>WKCE Mathematics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disabled in Wisconsin Public Schools</td>
<td>7321</td>
<td>0.14</td>
<td>0.03</td>
<td>0.17</td>
<td></td>
</tr>
<tr>
<td>Nondisabled in Wisconsin Public Schools</td>
<td>55861</td>
<td>0.4</td>
<td>0.16</td>
<td>0.56</td>
<td></td>
</tr>
<tr>
<td>Disabled in Urban District</td>
<td>166</td>
<td>0.2</td>
<td>0.01</td>
<td>0.21</td>
<td></td>
</tr>
<tr>
<td>Nondisabled in Urban District</td>
<td>1230</td>
<td>0.42</td>
<td>0.2</td>
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### 1998-1999 School Year

#### 4th Grade WKCE mathematics Test

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#### 8th Grade WKCE mathematics Test

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#### 10th grade WKCE mathematics Test

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### 1999-2000 School Year

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#### 8th Grade WKCE mathematics Test

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#### 10th grade WKCE mathematics Test

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## 2000-2001 School Year

### 4th Grade WKCE mathematics Test

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### 8th Grade WKCE mathematics Test

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### 10th grade WKCE mathematics Test

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## 2001-2002 School Year

### 4th Grade WKCE mathematics Test

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### 2002-2003 School Year

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#### 8th Grade WKCE mathematics Test

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#### 10th grade WKCE mathematics Test

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### 2003-2004 School Year

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#### 8th Grade WKCE mathematics Test

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#### 10th grade WKCE mathematics Test

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### 2004-2005 School Year

#### 4th Grade WKCE mathematics Test

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<tbody>
<tr>
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<td>0.12</td>
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<tr>
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#### 8th Grade WKCE mathematics Test

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<th>% Prof. and Adv.</th>
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#### 10th grade WKCE mathematics Test

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<td>0.03</td>
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<td>Nondisabled in Wisconsin Public Schools</td>
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<td>0.29</td>
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<tr>
<td>Disabled in Urban District</td>
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### 2005-2006 School Year

#### 4th Grade WKCE mathematics Test

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<th>% Advanced</th>
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#### 8th Grade WKCE mathematics Test

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#### 10th grade WKCE mathematics Test

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## 2006-2007 School Year

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## 2007-2008 School Year

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### 10th grade WKCE mathematics Test

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### 2008-2009 School Year

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#### 8th Grade WKCE mathematics Test

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#### 10th grade WKCE mathematics Test

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### 2009-2010 School Year

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#### 10th grade WKCE mathematics Test

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### 2010-2011 School Year

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### 2011-2012 School Year

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<td>Disabled in Urban District</td>
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#### 8th Grade WKCE mathematics Test

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#### 10th grade WKCE mathematics Test

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## 2012-2013 School Year

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<td>Disabled in Urban District</td>
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### 8th Grade WKCE mathematics Test

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</tr>
<tr>
<td>Disabled in Urban District</td>
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<td>0.01</td>
</tr>
<tr>
<td>Nondisabled in Urban District</td>
<td>1256</td>
<td>0.29</td>
<td>0.07</td>
</tr>
</tbody>
</table>

## 2013-2014 School Year

### 4th Grade WKCE mathematics Test

<table>
<thead>
<tr>
<th>Total Enrolled</th>
<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disabled in Wisconsin Public Schools</td>
<td>7660</td>
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<td>0.03</td>
</tr>
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<td>52803</td>
<td>0.45</td>
<td>0.11</td>
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<td>Disabled in Urban District</td>
<td>132</td>
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<td>0.02</td>
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<tr>
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<td>0.07</td>
</tr>
</tbody>
</table>

### 8th Grade WKCE mathematics Test

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<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disabled in Wisconsin Public Schools</td>
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<td>0.01</td>
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<td>Nondisabled in Wisconsin Public Schools</td>
<td>53770</td>
<td>0.38</td>
<td>0.13</td>
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<td>Disabled in Urban District</td>
<td>168</td>
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<td>0.01</td>
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<td>0.09</td>
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### 10th grade WKCE mathematics Test

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<th>Total Enrolled</th>
<th>% Proficient</th>
<th>% Advanced</th>
<th>% Prof. and Adv.</th>
</tr>
</thead>
<tbody>
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<td>Disabled in Wisconsin Public Schools</td>
<td>7510</td>
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</tr>
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<td>Nondisabled in Wisconsin Public Schools</td>
<td>55662</td>
<td>0.38</td>
<td>0.13</td>
</tr>
<tr>
<td>Disabled in Urban District</td>
<td>150</td>
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</tr>
<tr>
<td>Nondisabled in Urban District</td>
<td>1335</td>
<td>0.31</td>
<td>0.08</td>
</tr>
</tbody>
</table>
Appendix BA: 4th Grade Disabled and Non-Disabled Performance Graphs

Wisconsin and Urban District

4th grade Wisconsin Disabled vs Nondisabled Performance

4th grade Urban District Disabled vs Nondisabled Performance
Appendix BB: 8th Grade Disabled and Non-Disabled Performance Graphs

Wisconsin and Urban District

8th grade Wisconsin Disabled vs Nondisabled Performance

8th grade Urban District Disabled vs Nondisabled Performance
Appendix BC: 10th Grade Disabled and Non-Disabled Performance Graphs

Wisconsin and Urban District

10th grade Wisconsin Disabled vs Nondisabled Performance

10th grade Urban District Disabled vs Nondisabled Performance
### Appendix BD: 4th Grade Disabled and Non-Disabled Comparison Tables

#### Wisconsin (4th grd)

<table>
<thead>
<tr>
<th>Year</th>
<th>Disabled % Prof &amp; Adv</th>
<th>Nondisabled % Prof &amp; Adv</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998-99</td>
<td>0.4</td>
<td>0.8</td>
</tr>
<tr>
<td>1999-00</td>
<td>0.4</td>
<td>0.8</td>
</tr>
<tr>
<td>2000-01</td>
<td>0.33</td>
<td>0.71</td>
</tr>
<tr>
<td>2001-02</td>
<td>0.35</td>
<td>0.74</td>
</tr>
<tr>
<td>2002-03</td>
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<td>0.75</td>
</tr>
<tr>
<td>2003-04</td>
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<td>0.78</td>
</tr>
<tr>
<td>2004-05</td>
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<td>0.76</td>
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<tr>
<td>2005-06</td>
<td>0.42</td>
<td>0.76</td>
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<tr>
<td>2006-07</td>
<td>0.47</td>
<td>0.81</td>
</tr>
<tr>
<td>2007-08</td>
<td>0.21</td>
<td>0.47</td>
</tr>
<tr>
<td>2008-09</td>
<td>0.23</td>
<td>0.53</td>
</tr>
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<td>2009-10</td>
<td>0.24</td>
<td>0.55</td>
</tr>
<tr>
<td>2010-11</td>
<td>0.23</td>
<td>0.52</td>
</tr>
<tr>
<td>2011-12</td>
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<td>0.55</td>
</tr>
<tr>
<td>2012-13</td>
<td>0.23</td>
<td>0.52</td>
</tr>
<tr>
<td>2013-14</td>
<td>0.24</td>
<td>0.56</td>
</tr>
</tbody>
</table>

#### Urban District (4th grd)

<table>
<thead>
<tr>
<th>Year</th>
<th>Disabled % Prof &amp; Adv</th>
<th>Nondisabled % Prof &amp; Adv</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998-99</td>
<td>0.39</td>
<td>0.76</td>
</tr>
<tr>
<td>1999-00</td>
<td>0.4</td>
<td>0.8</td>
</tr>
<tr>
<td>2000-01</td>
<td>0.28</td>
<td>0.67</td>
</tr>
<tr>
<td>2001-02</td>
<td>0.36</td>
<td>0.74</td>
</tr>
<tr>
<td>2002-03</td>
<td>0.36</td>
<td>0.75</td>
</tr>
<tr>
<td>2003-04</td>
<td>0.47</td>
<td>0.75</td>
</tr>
<tr>
<td>2004-05</td>
<td>0.41</td>
<td>0.71</td>
</tr>
<tr>
<td>2005-06</td>
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<td>0.71</td>
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<td>2006-07</td>
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<td>0.82</td>
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<tr>
<td>2007-08</td>
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<td>2008-09</td>
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<td>2009-10</td>
<td>0.21</td>
<td>0.53</td>
</tr>
<tr>
<td>2010-11</td>
<td>0.18</td>
<td>0.53</td>
</tr>
<tr>
<td>2011-12</td>
<td>0.18</td>
<td>0.51</td>
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<tr>
<td>2012-13</td>
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</tr>
<tr>
<td>2013-14</td>
<td>0.17</td>
<td>0.43</td>
</tr>
</tbody>
</table>

*Note: The data for 1998-99 is not available.*
Appendix BE: 4th grade t-stat of WI Disabled vs. Non-Disabled for Appendix BD

t-Test: Paired Two Sample for Means
H0: µ(Wis. Disabled) ≥ µ(Wis. Non)
H1: µ(Wis. Disabled) < µ(Wis. Non)

**Wisconsin 4th grade Disabled vs. Non-Disabled**

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sample size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.4</td>
<td>15</td>
<td>0.32667</td>
<td>0.09604</td>
<td>0.00922</td>
</tr>
<tr>
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<td>0.654</td>
<td>0.12517</td>
<td>0.01567</td>
</tr>
</tbody>
</table>

**Paired two-sample t-test**

- Degrees of Freedom: 14
- Hypothesized Mean Difference: 0
- Pooled Variance: 0.01245
- Test Statistics: -31.76965
- Pearson Correlation Coefficient: 0.96907

**Two-tailed distribution**

- p-level: 0
  - Critical Value (5%): 2.14479

**One-tailed distribution**

- p-level: 0
  - Critical Value (5%): -1.76131
Appendix BF: 4th grade t-stat of Urban Disabled vs. Non-Disabled for Appendix BD

**t-Test: Paired Two Sample for Means**

H0: μ(Urb D. Disabled) ≥ μ(Urb D. Non)
H1: μ(Urb D. Disabled) < μ(Urb D. Non)

**Urban District 4th grade Disabled vs. Non-Disabled**

**Descriptive Statistics**

<table>
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<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
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<td>0.10567</td>
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</tr>
<tr>
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<td>15</td>
<td>0.62667</td>
<td>0.13657</td>
<td>0.01865</td>
</tr>
</tbody>
</table>

**Paired two-sample t-test**

<table>
<thead>
<tr>
<th>Degrees of Freedom</th>
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</thead>
<tbody>
<tr>
<td>Hypothesized Mean Difference</td>
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</tr>
<tr>
<td>Pooled Variance</td>
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<tr>
<td>Test Statistics</td>
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<tr>
<td>Pearson Correlation Coefficient</td>
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</table>

**Two-tailed distribution**

| p-level | 1.14383E-12 | Critical Value (5%) | 2.14479 |

**One-tailed distribution**

| p-level | 0. | Critical Value (5%) | -1.76131 |
### 8th Grade Disabled and Non-Disabled Comparison Tables

#### Wisconsin (8th grd) 1998:99 - 2013:14

<table>
<thead>
<tr>
<th>Year</th>
<th>Disabled % Prof. &amp; Adv.</th>
<th>Nondisabled % Prof. &amp; Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998:99</td>
<td>0.08</td>
<td>0.47</td>
</tr>
<tr>
<td>1999:00</td>
<td>0.08</td>
<td>0.47</td>
</tr>
<tr>
<td>2000:01</td>
<td>0.07</td>
<td>0.45</td>
</tr>
<tr>
<td>2001:02</td>
<td>0.08</td>
<td>0.50</td>
</tr>
<tr>
<td>2002:03</td>
<td>0.31</td>
<td>0.81</td>
</tr>
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<td>2003:04</td>
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<td>0.29</td>
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<td>0.80</td>
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<tr>
<td>2006:07</td>
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<td>0.81</td>
</tr>
<tr>
<td>2007:08</td>
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<td>0.44</td>
</tr>
<tr>
<td>2008:09</td>
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<td>0.47</td>
</tr>
<tr>
<td>2009:10</td>
<td>0.10</td>
<td>0.47</td>
</tr>
<tr>
<td>2010:11</td>
<td>0.11</td>
<td>0.39</td>
</tr>
<tr>
<td>2011:12</td>
<td>0.10</td>
<td>0.50</td>
</tr>
<tr>
<td>2012:13</td>
<td>0.10</td>
<td>0.50</td>
</tr>
<tr>
<td>2013:14</td>
<td>0.10</td>
<td>0.51</td>
</tr>
</tbody>
</table>

#### Urban District (8th grd) 1998:99 - 2013:14

<table>
<thead>
<tr>
<th>Year</th>
<th>Disabled % Prof. &amp; Adv.</th>
<th>Nondisabled % Prof. &amp; Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998:99</td>
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<td>0.10</td>
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</tr>
<tr>
<td>2000:01</td>
<td>0.03</td>
<td>0.38</td>
</tr>
<tr>
<td>2001:02</td>
<td>0.04</td>
<td>0.46</td>
</tr>
<tr>
<td>2002:03</td>
<td>0.21</td>
<td>0.76</td>
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<tr>
<td>2003:04</td>
<td>0.14</td>
<td>0.68</td>
</tr>
<tr>
<td>2004:05</td>
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<td>0.72</td>
</tr>
<tr>
<td>2005:06</td>
<td>0.28</td>
<td>0.81</td>
</tr>
<tr>
<td>2006:07</td>
<td>0.27</td>
<td>0.78</td>
</tr>
<tr>
<td>2007:08</td>
<td>0.04</td>
<td>0.38</td>
</tr>
<tr>
<td>2008:09</td>
<td>0.08</td>
<td>0.45</td>
</tr>
<tr>
<td>2009:10</td>
<td>0.10</td>
<td>0.46</td>
</tr>
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<td>2010:11</td>
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</tr>
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<td>0.41</td>
</tr>
<tr>
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<td>0.38</td>
</tr>
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</table>
Appendix BH: 8th grade t-stat of WI Disabled vs. Non-Disabled for Appendix BG

t-Test: Paired Two Sample for Means
H0: µ(Wis. Disabled) ≥ µ(Wis. Non)
H1: µ(Wis. Disabled) < µ(Wis. Non)

### Wisconsin 8th grade Disabled vs. Non-Disabled

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sample size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.08</td>
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<td>0.15467</td>
<td>0.09635</td>
<td>0.00928</td>
</tr>
<tr>
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<td>15</td>
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<td>0.1599</td>
<td>0.02557</td>
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</table>

**Paired two-sample t-test**

<table>
<thead>
<tr>
<th>Degrees of Freedom</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Hypothesized Mean Difference</td>
<td>0.0</td>
</tr>
<tr>
<td>Pooled Variance</td>
<td>0.01743</td>
</tr>
<tr>
<td>Test Statistics</td>
<td>-23.17356</td>
</tr>
<tr>
<td>Pearson Correlation Coefficient</td>
<td>0.96961</td>
</tr>
</tbody>
</table>

**Two-tailed distribution**

<table>
<thead>
<tr>
<th>p-level</th>
<th>Critical Value (5%)</th>
<th>2.14479</th>
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</table>

**One-tailed distribution**

<table>
<thead>
<tr>
<th>p-level</th>
<th>Critical Value (5%)</th>
<th>-1.76131</th>
</tr>
</thead>
</table>
Appendix BI: 8th grade t-stat of Urban Dis. Disabled vs. Non-Disabled for Appendix BG

**t-Test: Paired Two Sample for Means**

H0: \( \mu((\text{Urb D. Disabled}) \geq \mu((\text{Urb D. Non})) \)

H1: \( \mu((\text{Urb D. Disabled}) < \mu((\text{Urb D. Non})) \)

**Urban District 8th grade Disabled vs. Non-Disabled**

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sample size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
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<td>0.16278</td>
<td>0.0265</td>
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</tbody>
</table>

**Paired two-sample t-test**

- Degrees of Freedom: 14
- Hypothesized Mean Difference: 0
- Pooled Variance: 0.01652
- Test Statistics: -17.44009
- Pearson Correlation Coefficient: 0.91883

**Two-tailed distribution**

<table>
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<tr>
<th>p-level</th>
<th>Critical Value (5%)</th>
<th>Critical Value (5%)</th>
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</thead>
<tbody>
<tr>
<td>6.82441E-11</td>
<td>2.14479</td>
<td>2.14479</td>
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</table>

**One-tailed distribution**

<table>
<thead>
<tr>
<th>p-level</th>
<th>Critical Value (5%)</th>
<th>Critical Value (5%)</th>
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</thead>
<tbody>
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<td>-1.76131</td>
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</tbody>
</table>
## Appendix BJ: 10th Grade Disabled and Non-Disabled Comparison Tables

### Wisconsin (10th grd) 1998-99 to 2013-14

<table>
<thead>
<tr>
<th>Year</th>
<th>Disabled Prof. &amp; Adv.</th>
<th>Nondisabled Prof. &amp; Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998-99</td>
<td>0.05</td>
<td>0.42</td>
</tr>
<tr>
<td>1999-00</td>
<td>0.05</td>
<td>0.43</td>
</tr>
<tr>
<td>2000-01</td>
<td>0.09</td>
<td>0.51</td>
</tr>
<tr>
<td>2001-02</td>
<td>0.07</td>
<td>0.48</td>
</tr>
<tr>
<td>2002-03</td>
<td>0.21</td>
<td>0.76</td>
</tr>
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<td>2003-04</td>
<td>0.23</td>
<td>0.76</td>
</tr>
<tr>
<td>2004-05</td>
<td>0.24</td>
<td>0.78</td>
</tr>
<tr>
<td>2005-06</td>
<td>0.24</td>
<td>0.78</td>
</tr>
<tr>
<td>2006-07</td>
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<td>0.77</td>
</tr>
<tr>
<td>2007-08</td>
<td>0.07</td>
<td>0.47</td>
</tr>
<tr>
<td>2008-09</td>
<td>0.07</td>
<td>0.44</td>
</tr>
<tr>
<td>2009-10</td>
<td>0.07</td>
<td>0.46</td>
</tr>
<tr>
<td>2010-11</td>
<td>0.08</td>
<td>0.47</td>
</tr>
<tr>
<td>2011-12</td>
<td>0.08</td>
<td>0.49</td>
</tr>
<tr>
<td>2012-13</td>
<td>0.09</td>
<td>0.49</td>
</tr>
<tr>
<td>2013-14</td>
<td>0.08</td>
<td>0.51</td>
</tr>
</tbody>
</table>

### Urban District (10th grd) 1998-99 to 2013-14

<table>
<thead>
<tr>
<th>Year</th>
<th>Disabled Prof. &amp; Adv.</th>
<th>Nondisabled Prof. &amp; Adv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998-99</td>
<td>0.01</td>
<td>0.25</td>
</tr>
<tr>
<td>1999-00</td>
<td>0.01</td>
<td>0.25</td>
</tr>
<tr>
<td>2000-01</td>
<td>0.04</td>
<td>0.37</td>
</tr>
<tr>
<td>2001-02</td>
<td>0.04</td>
<td>0.37</td>
</tr>
<tr>
<td>2002-03</td>
<td>0.11</td>
<td>0.68</td>
</tr>
<tr>
<td>2003-04</td>
<td>0.09</td>
<td>0.68</td>
</tr>
<tr>
<td>2004-05</td>
<td>0.14</td>
<td>0.72</td>
</tr>
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<td>2005-06</td>
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</tr>
<tr>
<td>2007-08</td>
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<td>0.38</td>
</tr>
<tr>
<td>2008-09</td>
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<tr>
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<td>2011-12</td>
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<td>2012-13</td>
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<td>0.36</td>
</tr>
<tr>
<td>2013-14</td>
<td>0.03</td>
<td>0.39</td>
</tr>
</tbody>
</table>
Appendix BK: 10th grade t-stat of WI Disabled vs. Non-Disabled for Appendix BJ

t-Test: Paired Two Sample for Means
H0: \( \mu(\text{Wis. Disabled}) \geq \mu(\text{Wis. Non}) \)
H1: \( \mu(\text{Wis. Disabled}) < \mu(\text{Wis. Non}) \)

**Descriptive Statistics**

<table>
<thead>
<tr>
<th>VAR</th>
<th>Sample size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
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<td>0.0775</td>
<td>0.00601</td>
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<tr>
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<td>15</td>
<td>0.57333</td>
<td>0.14563</td>
<td>0.02121</td>
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</tbody>
</table>

**Paired two-sample t-test**

- Degrees of Freedom: 14
- Hypothesized Mean Difference: 0.
- Pooled Variance: 0.01361
- Test Statistics: -25.01418
- Pearson Correlation Coefficient: 0.99439

**Two-tailed distribution**

- p-level: 0.
- Critical Value (5%): 2.14479

**One-tailed distribution**

- p-level: 0.
- Critical Value (5%): -1.76131
Appendix BL: 10th grade t-stat of Urban Dis. Disabled vs. Non-Disabled for Appendix BJ

**t-Test: Paired Two Sample for Means**
H0: $\mu(\text{Urb D. Disabled}) \geq \mu(\text{Urb D. Non})$
H1: $\mu(\text{Urb D. Disabled}) < \mu(\text{Urb D. Non})$

**Urban District 10th grade Disabled vs. Non-Disabled**

<table>
<thead>
<tr>
<th>Descriptive Statistics</th>
<th>VAR</th>
<th>Sample size</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Variance</th>
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</thead>
<tbody>
<tr>
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<td>0.05354</td>
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**Paired two-sample t-test**

<table>
<thead>
<tr>
<th>Degrees of Freedom</th>
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<tbody>
<tr>
<td>Hypothesized Mean Difference</td>
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<tr>
<td>Pooled Variance</td>
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<tr>
<td>Test Statistics</td>
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<tr>
<td>Pearson Correlation Coefficient</td>
<td>0.82912</td>
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</tbody>
</table>

**Two-tailed distribution**

| p-level | 1.64792E-8 |
| Critical Value (5%) | 2.14479 |

**One-tailed distribution**

| p-level | 8.23962E-9 |
| Critical Value (5%) | -1.76131 |