

## ABSTRACT

Travis E. Lewis. STUDENT SERVICES AND EDUCATIONAL LEADERSHIP: THE EFFECT OF STUDENT SERVICES STAFFING RATIOS ON STUDENT ACHIEVEMENT AND DROPOUT PREVENTION IN PUBLIC SCHOOLS. (Under the direction of Dr. William Grobe) Department of Educational Leadership, February, 2010.

While public school teachers and administrators are focused on the challenges of growing accountability for improvement in classroom performance, they depend on instructional support staff, titled student services, to help children minimize the impact of barriers to academic success that arise in the home, community and in school and maximize their potential in school. However, the impact that student services personnel have in this regard has recently come into question, particularly as leadership in education and government make fiscal decisions for schools based on the cost-benefit ratio of all current and potential programming and staffing in relation to student achievement outcomes.

As there is limited outcome data examining the effect of increased expenditures for student services staffing on student achievement outcomes, the purpose of this study was two-fold: to determine if a significant relationship exists between student services staff-to-student ratios and student achievement, and to determine if a significant relationship exists between student services staff-to-student ratios and dropout rates.

A quantitative, correlational research design was used that involved collecting student services staffing totals, as well as student performance data and dropout rates, for all 115 public school districts within the state of North

Carolina. A series of Fisher's exact tests were performed to determine if a significant relationship exists between student services staff-to-student ratios and student outcomes in academic achievement and dropout rate. Staffing for each of the four identified fields within student services – school counselors, school nurses, school social workers, and school psychologists – were analyzed separately as well as collectively to determine if there is a significant relationship with student outcomes. Student outcomes analyzed included district growth status, district status for Adequate Yearly Program or AYP, and dropout rates for grades 9-12.

The findings of this study show that a statistically significant relationship exists between school psychologist-to-student ratios and district growth status at the  $p < .05$  level. The implications of the findings of this study for education leaders, as well as recommendations for further study, are discussed.

STUDENT SERVICES AND EDUCATIONAL LEADERSHIP:  
THE EFFECT OF STUDENT SERVICES STAFFING RATIOS ON  
STUDENT ACHIEVEMENT AND DROPOUT PREVENTION  
IN PUBLIC SCHOOLS

A Dissertation

Presented to

The Faculty of the Department of Educational Leadership

East Carolina University

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Education

by

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February 16, 2010

STUDENT SERVICES AND EDUCATIONAL LEADERSHIP:  
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## DEDICATION

For my wife, Jennifer, our son, Gabriel, and his little brother or sister to be. Your love, encouragement, patience and many sacrifices along the way have made this possible. I am so very blessed to have you in my life. or my parents, David and Kay. Thank you for teaching me the importance of education, hard work, and determination. Your love and support knows no bounds.

## ACKNOWLEDGEMENTS

The completion of the doctoral degree and this dissertation would not have been possible without the guidance, encouragement and support of so many wonderful people. I want to extend my sincere and heartfelt gratitude to each of these individuals.

First, to the members of the East Carolina University Department of Educational Leadership, I wish to thank each of you for a wonderful experience in the doctoral program. I have learned so very much under your guidance and direction, and have thoroughly enjoyed every step of the way.

To the members of my dissertation committee – Dr. Bill Grobe, Dr. Hal Holloman, Dr. Jim McDowelle, Dr. Lane Mills, and Dr. Art Rouse – your advice and support throughout this process has been invaluable. To my chair, Dr. Bill Grobe, your patience, encouragement, wisdom and good humor have meant more to me than I can adequately express in words. Thank you!

To my doctoral cohort classmates, I thank you for your camaraderie and encouragement throughout our program of study. In particular, I want to express my sincere appreciation to Patrick Miller for his dear friendship and support.

I would like to thank the Dianne and Chip Linville Doctoral Fellowship for providing financial assistance to help make the dream of completing the doctoral program of study a reality for me. Additionally, I wish to thank Gwen Joyner of the Educational Leadership Department for the use of her fine editing skills. Also, my

sincere appreciation to Andrew Cox and Ken Barbour of the North Carolina Department of Public Instruction for their invaluable assistance in obtaining the necessary data for my research.

I also wish to acknowledge and thank my many close friends and colleagues with Pitt County Schools, including Superintendent Beverly Reep and the entire Student Services Department, for encouraging me to pursue this degree and cheering me on along the way.

Finally, to my family, I want to thank you for your unwavering support throughout this personal and professional journey. To my wife, Jenn, your love and encouragement has inspired me throughout. My deepest appreciation and love to you always.



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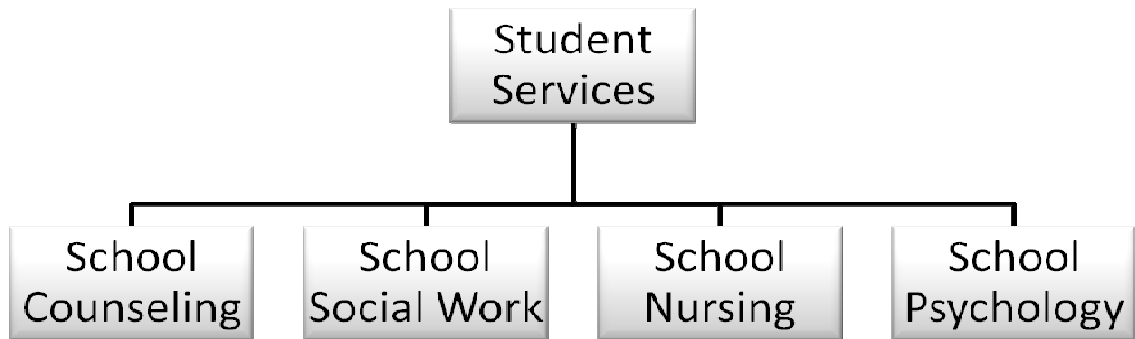
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## CHAPTER 1: INTRODUCTION

Barriers to academic success for children arise in the home, in the community, and in schools. “Schools help shape our children intellectually, socially, and emotionally. Many of the problems that confront society also manifest themselves in schools, where they have a significant impact on the school experience of many children” (Slovak, Joseph, & Broussard, 2006, p. 97). While teachers and school administrators are focused on the challenges of growing accountability for improvement in classroom performance, they depend on instructional support staff, entitled student services, to help children minimize the impact of these societal problems and maximize their potential in school.

Student services, also known as student support services, pupil services, or extracurricular support services, are defined in Title IX, Section 9101 of the No Child Left Behind Act as “school counselors, school social workers, school psychologists, and other qualified professional personnel involved in providing assessment, diagnosis, counseling, educational, therapeutic, and other necessary services as part of a comprehensive program to meet student needs” (U.S. Congress, 2002). It is generally held that student services encompass, at a minimum, the professional fields of school counseling, school social work, school nursing, and school psychology (Adelman & Taylor, 2006; Brown & Trusty, 2005; California Department of Education, 2003; Carrell & Carrell, 2006; National Association of School Psychologists, 2004; Schmidt & Ciechalski, 2001) (see Figure 1).



*Figure 1. Professions within student services.*

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Other professionals that some school districts or states have brought within the domain of student services include speech-language therapists, audiologists, physical therapists, and occupational therapists, among others (National Alliance of Pupil Services Organizations, 2008). However, since these fields are not mentioned in the definitions of student services herein referenced, nor are they consistently found within student services departments across states and school districts, they have been excluded for the purpose of this study.

In general, student services staff help meet the needs of students through their efforts in six clusters of activity: improving social skills, providing mental health services, removing barriers to achievement, serving as an advocate/change agent, providing organizational support within schools, and positively addressing student behavior and disciplinary problems (Louis & Gordon, 2006). While the efforts of student services staff include removing barriers to academic achievement, the impact that student services personnel have in this regard has recently come into question, particularly as fiscal analysts in financially-strapped school districts look at the cost-benefit ratio of all current and potential programming. "Student services expenditures are undergoing intense scrutiny and...the effectiveness of school counseling is being measured in terms of student achievement. With the continued impact of No Child Left Behind, this trend is likely to continue and exacerbate" (Jacques & Brorsen, 2002, p. 998). Goodman and Young (2006) portray the fiscal reality of public education in the United States as follows:

Within the recent past as well as the foreseeable future, most public school districts have endured and will continue to face a declining financial budget situation. To control costs and to contain expenditures, cuts in operation of a public school district may be needed. First to go within this deliberation process involving the balancing of a budget is maintenance personnel followed by extra curricular support service personnel (p. 11).

Adelman and Taylor (2006) concur with this perspective, stating “[a]s has always been the case when education budgets tighten, the tendency is to trim student support efforts more severely than other budget items. This reflects the long-standing marginalization in policy and practice of efforts to address barriers to learning and teaching” (Adelman & Taylor, p. 1). When there are fiscal barriers to a balanced school budget, often it is the student services programs and staff that experience cuts in funding and support.

Legislation such as No Child Left Behind leads school districts to focus on accountability and student achievement. Jacques and Brorsen (2002) state that, “in order to make good decisions about allocating scarce resources, superintendent and school boards would like information on the interactions among different types of school expenditures and student outcomes” (p. 997). Ideally, the information provided would include the impact of student services personnel on student achievement. Funding for programs and staffing in public schools is contentious, given scarce resources and the demand for greater accountability. Some schools have chosen to eliminate student support positions

entirely and devote the funding saved toward more teachers and smaller classroom size (Louis & Gordon, 2006; Odden & Archibald, 2001). Fiscal decision-making and staff allotments are based on which programs will have the greatest positive impact on student achievement considering their respective costs. Given this dynamic, student services staffing ratios have the potential to increase only as student services programs demonstrate, through a growing base of research, that they have a significant effect on student achievement relative to other potential programs under consideration for new or continued funding. Though many administrators support student services in schools, “they cannot submit budget requests based on blind faith” (Otwell & Mullis, 1997, p. 347). Student services staff must “provide their allies with evidence they need in order to make public policy decisions they can justify to their communities” (p. 347).

Unfortunately, not much data exist to help school boards and administrators prioritize funding for student services staffing during difficult budgetary seasons, particularly in relation to the impact these services have on improving student performance (Carrell & Carrell, 2006; Goodman & Young, 2006; Guttu, Engelke, & Swanson, 2004; Jacques & Brorsen, 2002; Whiston, 2002). However, a growing body of research has developed over the past decade examining the effect of counseling, social work, nursing and psychological services on student outcomes. Of the research that has been conducted examining the impact of these services on student achievement and

on dropout prevention, the results have mostly been positive (Allen, 2003; Bagley & Pritchard, 1998; Baker & Jansen, 2000; Brigman & Campbell, 2003; California Department of Education, 2003; Christo, 2005; Cooper, 2005; Costante, 2006; Diehl & Frey, 2008; Early & Vonk, 2001; Edmondson & White, 1998; Engelke, Guttu, Warren, & Swanson, 2008; Epstein & Sheldon, 2002; Fiorello, Hale, & Snyder, 2006; Franklin, Kim, & Tripodi, 2009; Goodman & Young, 2006; Gregor, 2005; Guttu et al., 2004; Hawken & Hess, 2006; Henderson, Mapp, & Southwest Educational Development Lab, 2002; Henley & Furlong, 2006; Herring, 1998; Lapan, Gysbers & Petroski, 2001; Lapan, Gysbers, & Sun, 1997; Maughan, 2003; Newsome, 2004, 2005; Newsome, Anderson-Butcher, Fink, Hall, & Huffner, 2008; Openshaw, 2002; Otwell & Mullis, 1997; Sheldon, 2007; Sink, Akos, Turnbull, & Mvududu, 2008; Sink & Stroh, 2003; Telljohann, Dake, & Price, 2004; Thiede, 2005; Tobias & Myrick, 1999; Walsh & Murphy, 2003; Webb, Brigman, & Campbell, 2005; Whiston & Sexton, 1998; Whitfield, 1999; Wyman, 2005). While student services staffing was not the specific focus of these studies, one might logically deduce that a change in student services staffing would affect the means and extent to which the services and interventions explored in these studies are provided. It is based on these studies and others that Adelman and Taylor (2006) claim that “excessive cuts to learning supports ensure the maintenance of student dropout rates and delinquency, teacher dropout rates, student disengagement in classroom learning, the achievement gap, the plateau

effect related to student achievement, [and] the growing list of schools designated as low performing” (p. 1).

In contrast, while the aforementioned studies portray student services as having positive effects on student achievement and dropout prevention, a study conducted by Jacques and Brorsen (2002) counters that greater expenditures on student services had a negative effect on student performance. Overall, the base of research on the impact of student services on student performance has begun to grow steadily since the implementation of No Child Left Behind (Dimmitt, Carey, & Hatch, 2007). However, there is little doubt that more research is needed in this area.

Many states and school districts throughout the nation are attempting to address the problem of school dropouts. Stemming from this increased public focus on dropout prevention, the North Carolina General Assembly approved “an act directing the state Board of Education to report on the role school counselors play in providing dropout prevention and intervention services to students in middle and high school and on the state board’s implementation of its policy regarding school counselors” (North Carolina Department of Public Instruction [NCDPI], 2007b). The justification for this legislation was that the General Assembly needed “additional information to determine whether adjustments should be made in funding for school counselors” (NCDPI, 2007b). If research demonstrates that student services staff – in this instance, school counselors – can have a positive impact on reducing the number of students dropping out of

school, it is conceivable that consideration for additional funding for student services positions would result.

Ultimately, positive student outcomes in the form of improved academic achievement and reduced instances of school dropout are desired by all. However, more research is needed to inform educational and governmental leadership as to whether student services staffing expenditures in particular would be a worthwhile investment toward achieving these outcomes.

#### Statement of the Problem

This study investigated the relationship student services staff-to-student ratios have on student academic performance and dropout rates. Most of the studies cited in the review of related literature in chapter 2 suggest that student services have a positive effect on academic performance and dropout prevention. However, the impact of additional student services expenditures in the form of increased staffing has not been examined thoroughly. This information may be beneficial to leadership in education and government who make fiscal and budgetary decisions for schools based on limited resources and, in the case of student services, limited outcome data.

#### Purpose of the Study

The purpose of this study was two-fold: to determine if a significant relationship exists between student services staff-to-student ratios and student achievement, and to determine if a significant relationship exists between student services staff-to-student ratios and dropout rates. For this study, the term student



services refers collectively to the fields of school counseling, school social work, school nursing and school psychology.

### Significance of the Study

While student services staff and programs make a difference in the lives of children, as evidenced in chapter 2, there is a need for greater research on the direct impact of student services staffing ratios on student academic outcomes. With the growing demand of public schools to increase student performance despite looming fiscal constraints, educational and governmental leaders need to be able to make informed decisions about schools' funding and staffing that maximize academic outcomes. This study provides insight into whether or not a significant relationship exists between student services staff-to-student ratios and student achievement, and between student services staff-to-student ratios and dropout rates. It is hoped that the results of this study will aid educational and governmental leaders in making decisions regarding the efficient use of available funds in maximizing student outcomes, particularly as it relates to student services staffing.

### Research Questions

The primary research questions of this study were:

1. Is there a significant relationship between student services staff-to-student ratios and student achievement?
2. Is there a significant relationship between student services staff-to-student ratios and dropout rates?

### Null Hypotheses

The following null hypotheses were investigated:

H<sub>0</sub>1: A statistically significant relationship does not exist between total student services staff-to-student ratios and district growth status.

H<sub>0</sub>2: A statistically significant relationship does not exist between school counselor-to-student ratios and district growth status.

H<sub>0</sub>3: A statistically significant relationship does not exist between school social worker-to-student ratios and district growth status.

H<sub>0</sub>4: A statistically significant relationship does not exist between school nurse-to-student ratios and district growth status.

H<sub>0</sub>5: A statistically significant relationship does not exist between school psychologist-to-student ratios and district growth status.

H<sub>0</sub>6: A statistically significant relationship does not exist between total student services staff-to-student ratios and district Adequate Yearly Progress (AYP) status.

H<sub>0</sub>7: A statistically significant relationship does not exist between school counselor-to-student ratios and district Adequate Yearly Progress (AYP) status.

H<sub>0</sub>8: A statistically significant relationship does not exist between school social worker-to-student ratios and district Adequate Yearly Progress (AYP) status.

H<sub>0</sub>9: A statistically significant relationship does not exist between school

nurse-to-student ratios and district Adequate Yearly Progress (AYP) status.

H<sub>0</sub>10: A statistically significant relationship does not exist between school psychologist-to-student ratios and district Adequate Yearly Progress (AYP) status.

H<sub>0</sub>11: A statistically significant relationship does not exist between total student services staff-to-student ratios and district dropout rate for grades 9-12.

H<sub>0</sub>12: A statistically significant relationship does not exist between school counselor-to-student ratios and district dropout rate for grades 9-12.

H<sub>0</sub>13: A statistically significant relationship does not exist between school social worker-to-student ratios and district dropout rate for grades 9-12.

H<sub>0</sub>14: A statistically significant relationship does not exist between school nurse-to-student ratios and district dropout rate for grades 9-12.

H<sub>0</sub>15: A statistically significant relationship does not exist between school psychologist-to-student ratios and district dropout rate for grades 9-12.

### Overview of Methodology

This study investigated the relationship student services staff-to-student ratios have on student academic performance and dropout rates. For this

purpose, a quantitative, correlational research design was used. Data were collected from the North Carolina Department of Public Instruction on all 115 school districts, or local education agencies (LEAs), within the state. The data included:

1. The total number of positions employed and specifically coded as school counselor, school nurse, school social worker, or school psychologists within each school district in the state of North Carolina for the 2008-2009 school year.
2. The total number of students enrolled within each school district in the state of North Carolina for the 2008-2009 school year.
3. The growth status of each public school in the state of North Carolina for the 2008-2009 school year.
4. The Adequate Yearly Progress (AYP) status of each school district in the state for the 2008-2009 school year.
5. The dropout rates for grades 9-12 for each school district in the state of North Carolina for the 2007-2008 school year.

A series of Fisher's exact tests were performed to determine if a relationship exists between student services staff-to-student ratios and student outcomes in academic achievement and dropout rate. Staffing for each of the four identified positions within student services – school counselors, school nurses, school social workers, and school psychologists – were analyzed separately as well as collectively to determine if there was a relationship with

student outcomes. The following district measures of student outcomes were analyzed:

1. District growth status.
2. District status for Adequate Yearly Progress.
3. Dropout rates for grades 9-12.

In all, 15 Fisher's exact tests were performed (see Table 1).

Prior to investigating the relationship student services staff-to-student ratios have on student academic performance and dropout rates, several key terms needed to be defined for the purposes of this study.

*Student Services* - As noted earlier in this chapter, student services, also known as student support services, pupil services, or extracurricular support services, are defined in Title IX, Section 9101 of the No Child Left Behind Act as "school counselors, school social workers, school psychologists, and other qualified professional personnel involved in providing assessment, diagnosis, counseling, educational, therapeutic, and other necessary services as part of a comprehensive program to meet student needs" (U.S. Congress, 2002). It is generally held that student services encompass, at a minimum, the professional fields of school counseling, school nursing, school social work and school psychology (Adelman & Taylor, 2006; California Department of Education, 2003; Carrell & Carrell, 2006; NASP, 2004). The aim of student services programs and personnel is to "support academic achievement by working to meet the psychological and educational needs of students" (NASP, 2004). More

Table 1

*Fisher's Exact Tests Examining Student Services Staff-to-Student Ratios and Student Outcomes Measures*

	Student Services Staff-to-Student Ratio (high/low)	School Counselor-to- Student Ratio (high/low)	School Social Worker-to- Student Ratio (high/low)	School Nurse- to-Student Ratio (high/low)	School Psychologist-to- Student Ratio (high/low)
District Growth (met/not met)	Fisher's exact test 1.1	Fisher's exact test 1.2	Fisher's exact test 1.3	Fisher's exact test 1.4	Fisher's exact test 1.5
AYP Status (met/not met)	Fisher's exact test 2.1	Fisher's exact test 2.2	Fisher's exact test 2.3	Fisher's exact test 2.4	Fisher's exact test 2.5
Dropout Rate (above/below state average)	Fisher's exact test 3.1	Fisher's exact test 3.2	Fisher's exact test 3.3	Fisher's exact test 3.4	Fisher's exact test 3.5

specifically, student services staff help meet the needs of students through their efforts in six clusters of activity: improving social skills, providing mental health services, removing barriers to achievement, serving as an advocate/change agent, providing organizational support within schools, and positively addressing student behavior and disciplinary problems (Louis & Gordon, 2006).

*School Counselors* - School counselors are certified school staff whose role is to “deliver a comprehensive school counseling program encouraging all students’ academic, career and personal/social development, and helping all students in maximizing student achievement” (American School Counselor Association [ASCA], 2004). The Education Trust defines school counseling as “a profession that focuses on the relations and interactions between students and their school environment with the expressed purpose of reducing the effect of environmental and institutional barriers that impede student academic success. The profession fosters conditions that ensure educational equity, access, and academic success for all students K-12” (Education Trust, 2009).

*School Social Workers* - School social workers are certified school staff whose role, “through collaboration with schools, families, and communities,” is to “provide a comprehensive approach to meeting the needs of students through early identification, prevention, intervention, counseling, and support” (School Social Work Association of America [SSWAA], 2001).

*School Nurses* - School nurses are typically registered nurses whose mission is to advance “the well-being, academic success, and life-long

achievement of students. To that end, school nurses facilitate positive student responses to normal development; promote health and safety; intervene with actual and potential health problems; provide case management services; and actively collaborate with others to build student and family capacity for adaptation, self management, self advocacy, and learning” (National Association of School Nurses [NASN], 1999).

*School Psychologists* - School psychologists work to “help children and youth succeed academically, socially, and emotionally. They collaborate with educators, parents, and other professionals to create safe, healthy, and supportive learning environments for all students that strengthen connections between home and school” (National Association of School Psychologists [NASP], 2003). In relation to the other student services programs, “the role of school psychologists is unique in the provision of psychological evaluation” (NASP, 2004, p. 2).

*Dropout* - The definition of a dropout varied across educational institutions and states up until the late 1990s, when the National Center for Education Statistics developed, in collaboration with the 50 states, a common definition and method of calculation (Kushman, Sieber, & Heariold-Kinney, 2000; Planty, Hussar, Snyder, Provasknik, Kena, Dinkes, KewalRamani, Kemp, 2008). By this definition, a dropout is defined as “an individual who:

- was enrolled in school at some time during the previous school year and was not enrolled on October 1 of the current school year; or



- was not enrolled on October 1 of the previous school year although expected to be in membership (i.e. was not reported as a dropout the year before); and
- has not graduated from high school or completed a state- or district-approved educational program; and
- does not meet any of the following exclusionary conditions:
  1. transferred to another public school district, private school, or state- or district-approved education program;
  2. temporarily absent due to suspension or illness, or
  3. death” (Planty et al., 2008).

*Dropout Count* - Also known as an event count, the dropout count is defined by the state of North Carolina as “the number of dropouts during a school year, beginning on the first day of the academic year and ending on the last day of the subsequent summer vacation” (NCDPI, 2008b, p. 3).

*Dropout Rate* - Also known as the event dropout rate, the dropout rate is “the number of students in a particular grade span dropping out in one year, divided by a measure of the total students in that particular grades span” (NCDPI, 2008d, p. 1). As outlined by NCDPI (2008b, p. 19), the method for calculating the dropout rate is as follows:

*Step 1:* Include all cases of reported dropouts in the selected grade Level(s) in the numerator.

*Step 2:* To determine the denominator,

- Include the twentieth day membership (total student enrollment) for the reporting (previous) school year;
- From the twentieth day membership from the reporting (previous) school year, subtract the number of new students enrolled and present on day 20 of the current school year, and add the current year's twentieth day membership.
- Divide by two; then add the numerator to this average.

*Step 3:* Calculate a rate by dividing the numerator by the denominator; round off to the nearest one hundredth for the dropout rate for the selected grade level(s).

*Formula:*

$$\frac{\text{Numerator} = \text{Total Number Dropouts}}{\text{Denominator} = [(\text{20}^{\text{th}} \text{ Day Membership of Previous School Year} - \text{New Students Enrolled \& Present on Day 20 of Current Year} + \text{20}^{\text{th}} \text{ Day Membership of Current School Year}) / 2] + \text{Numerator}}$$

The formula and definition used above by North Carolina falls in accordance with the formula and definition developed the National Center for Education Statistics with the cooperation of the 50 states (Snyder & Hoffman, 2002). The only notable difference is that, rather than using the twentieth day of the school year as North Carolina does, October 1 is the operational date used by NCES for

collection of membership or total student enrollment, as found earlier in the definition of a dropout (Snyder & Hoffman).

*ABCs* - According to NCDPI (2009a), “The ABCs of public education is North Carolina’s comprehensive plan to improve public schools. The plan is based on three goals: (1) strong accountability, ‘A,’ (2) mastery of basic skills, ‘B,’ and (3) localized control, ‘C’” (p. 24).

*North Carolina End-of-Grade Tests of Reading Comprehension and Math*

- The North Carolina EOG Tests of Reading and Math are state-required, multiple-choice exams administered at the end of the school year to all students in grades 3 – 8 as part of the statewide assessment program (NCDPI, 2008e). “These curriculum-based achievement tests are specifically aligned to the North Carolina Standard Course of Study and include a variety of strategies to measure the achievement of North Carolina students” (NCDPI, 2008e, p. 1).

*The North Carolina End-of-Course Tests* - The North Carolina EOC Tests are state-required, multiple choice exams administered at the end of the following courses as part of the statewide assessment program: English I, Algebra I, Geometry, Algebra II, Physical Science, Biology, Chemistry, Physics, Civics & Economics, and U.S. History (North Carolina Department of Public Instruction, 2008g). “These curriculum-based achievement tests are specifically aligned to the North Carolina Standard Course of Study and include a variety of strategies to measure the achievement of North Carolina students” (NCDPI, 2008e, p. 1).

*Proficiency* - Proficiency levels, also known as achievement levels, are predetermined performance standards that compare a student's score on the NC end-of-grade test to that of grade-level expectations (NCDPI, 2008e). There are four achievement levels – I, II, III, and IV, with students scoring at Level III and IV being considered at or above grade-level expectations (NCDPI, 2008e). Percent proficiency is a means by which a school, district, or state can demonstrate the number of students in a grade level who are at Level III or IV on a specific grade-level end-of-grade test.

*Growth* - Growth, also known as academic change, is “an indication of the rate at which students in the school learned over the past year. The standard is equivalent to a year's worth of growth for a year of instruction” (NCDPI, 2008a, p. 3). For a public school student in North Carolina to demonstrate growth, he or she is “expected to perform as well, or better, on the end-of-grade (EOG) assessment for the current year as she or he did, on average, during the previous two years” (NCDPI, 2008a, p. 3). More specifically:

“[T]he ABCs currently uses a standardized scale, similar to a z-score, to measure relative student performance. Under the current formulas, student scores are standardized and a student's performance is considered as a point on the c-scale (change scale) relative to standard performance for that grade level in a standard setting year. A student's developmental scale score is converted to a c-scale score. In the first year of a test edition implementation (called the standard setting year),

approximately half of the students in the state will score above “0” and half below. After the standard setting year, a student scoring above “0” on the *c-scale* is performing better than the average student in the standard setting year. Based on historical data, what is different about the *c-scale* from normative scales is that there is no reason why all students in the state cannot score above “0” in any year after the standard setting year. On the *c-scale*, if a student performs equally as well in two consecutive years, the *academic change* (AC) would be “0,” meaning for example that the student is performing equally as well in grade 5 as previously in grade 4 (“equally well” being relative to the grade level average in the standard setting year). Using these formulas, schools that assist students to achieve as well in the current year as in the previous year have a change of “0” on the *c-scale*. If the school does not perform as well in the current year, the AC is negative, and if the school performs better, the AC is positive” (NCDPI, 2008a, p. 1-2).

Those schools or districts whose average student academic change is greater than or equal to 0 have met expected growth. Those schools or districts whose average student academic change is less than 0 have not met expected growth (NCDPI, 2008a).

The formula for school/district academic change for elementary and middle grades is as follows:

$$\text{School / District AC} = \frac{\sum \text{AC}_{(EOG)}}{\text{Total Count}}$$

Where “AC” is academic change and “total count” is the number of academic change scores (NCDPI, 2008a).

While growth for elementary and middle grades is based solely upon student performance on End-of-Grade Tests, growth at the high school level is calculated using not only student performance on End-of-Grade and End-of-Course Tests, but additional factors as well. When determining high school growth, “change in dropout rate will be multiplied by  $\frac{1}{4}$  the ADM [enrollment] of the school and added to the denominator [of the formula] such that an increase in dropouts will have the same effect as more students not meeting the *academic change* target of “0.” Also, change in percent of students graduating in the College Tech Prep Curriculum and College University Prep Curriculum will be multiplied by the number of graduates and added to the numerator [of the formula] such that this change will appear as students who meet the standard” (NCDPI, 2008a, p. 9). Therefore, as part of the high school growth formula, the dropout rate as well as the college-bound program of study completion rate have an influence upon growth status for high schools and their respective LEAs / districts.

*Adequate Yearly Progress (AYP)* - According to NCDPI (n.d.b, 2009a), AYP “measures the yearly progress of different groups of students at the school, district, and state levels against yearly target goals in reading/language arts and

mathematics. All public schools, in North Carolina and throughout the country, must measure and report Adequate Yearly Progress as outlined in NCLB.

Adequate Yearly Progress is the minimum level of progress in reading/language arts and mathematics proficiency made by students in a year. If a school misses one target goal, it does not make Adequate Yearly Progress.”

*Adequate Yearly Progress for School Districts* - “School districts are held to the same proficiency target goals for students in reading and mathematics that are established for schools. AYP is determined for a school district by compiling the data for each student group and for the students as a whole in the district. A school district ...[must meet] target goals in the same subject (reading or mathematics) in each of three grade spans (3-5, 6-8, and high school) for two years in a row” (NCDPI, n.d.c).

#### Limitations

The limitations of the study were as follows:

1. Contracted services for students that fall under the umbrella of student services could not be accounted for in this study.
2. Student services other than School Counseling, School Social Work, School Nursing, and School Psychology may impact student achievement and dropout prevention but are not included in this study.
3. In the school districts analyzed, decisions on spending for programs, staffing and services other than student services vary across districts

and may account for differences in student achievement and dropout rates.

4. Data providing growth by district for the 2008-2009 school year was not available from NCDPI; however, growth by school within each district was available. Therefore, an average of the growth scores of the schools within each district was calculated and used as an approximation of the overall district growth level.

#### Assumptions

The assumptions of the study were as follows:

1. The quality of the services provided by student services staff across the school districts examined was constant.
2. The socioeconomic status of students was accounted for through the availability of additional state and federal funds for staffing and services in low-wealth districts.
3. The percentage of students identified as special needs was accounted for through the availability of additional federal funds through IDEA for staffing and services in districts with higher rates of identified students.
4. All student services staffing within analyzed school districts are accounted for fully and accurately by the Division of Financial and Business Services of NCDPI.
5. Student services staff-to-student ratios within each school district were constant throughout the 2007-2008 and 2008-2009 school years.



6. The quality of leadership in the school districts examined was constant.
7. The quality of teaching and instruction in the school districts examined was constant.
8. All instructional programs and services, excluding student services, in the school districts examined were constant.

### Research Organization

This research study is organized into five chapters. Chapter 1 is an introduction to the study; chapter 2 consists of a thorough review of literature relating to Student Services and relevant subtopics; in chapter 3, a description of the methodology used for this study is detailed; chapter 4 is a review of the results in relation to the research questions and hypotheses of the study; finally, chapter 5 includes a thorough discussion of the findings of the study, implications of the results, and recommendations for further research.

## CHAPTER 2: REVIEW OF RELATED LITERATURE

The purpose of the review of related literature is to provide the necessary context for framing the problems examined in this study, namely the effect of student services staffing decisions on student achievement and school dropout.

The following topics are covered in the review of related literature: (1) the purpose and history of student services in public schools, including that of school counseling, school social work, school nursing and school psychology; (2) a review of policies related to student services staffing in public schools; (3) existing research on the impact of student services on student outcomes; (4) achievement testing in North Carolina public schools; (5) the dropout crisis in public education; (6) educational leadership in the context of social and emotional learning within public schools.

### Student Services in Public Schools

Student services, also known as student support services, pupil services, or extracurricular support services, are defined in Title IX, Section 9101 of the No Child Left Behind Act as “school counselors, school social workers, school psychologists, and other qualified professional personnel involved in providing assessment, diagnosis, counseling, educational, therapeutic, and other necessary services as part of a comprehensive program to meet student needs” (U.S. Congress, 2002). It is generally held that student services encompass, at a minimum, the professional fields of school counseling, school social work, school nursing, and school psychology (Adelman & Taylor, 2006; Brown & Trusty, 2005;

California Department of Education, 2003; Carrell & Carrell, 2006; National Association of School Psychologists, 2004; Schmidt & Ciechalski, 2001). Other professionals that some school districts or states have brought within the domain of student services include speech-language, audiologists, physical therapists, and occupational therapists, among others (National Alliance of Pupil Services Organizations, 2008).

The aim of student services programs and personnel is to “support academic achievement by working to meet the psychological and educational needs of students” (NASP, 2004). More specifically, student services staff help meet the needs of students through their efforts in six clusters of activity: improving social skills, providing mental health services, removing barriers to achievement, serving as an advocate/change agent, providing organizational support within schools, and positively addressing student behavior and disciplinary problems (Louis & Gordon, 2006).

Holcomb-McCoy (2007) notes that “central to the success of high-achieving schools is a school culture that supports students and provides services to them that enhance their academic achievement. Student support services in schools...provide support for students’ academic and emotional development” (Holcomb-McCoy, p. 103). A closer examination into the role of each of the various fields within student services in public schools follows.

### *School Counselors*

The role of the school counselor in public schools is to “deliver a comprehensive school counseling program encouraging all students’ academic, career and personal/social development and helping all students in maximizing student achievement” (ASCA, 2004). More specifically, “school counselors provide counseling and guidance for students...to assist [them] with academic and personal problems to help them succeed in school” (Openshaw, 2008, p. 4).

In a comprehensive school counseling program, there are several duties or components that school counselors perform. These include counseling students either individually or in small groups; consulting with teachers, parents, other student services staff, and local agencies to collaboratively address the needs of students; coordinating the provision of services for students; providing case management of student issues; leading the school staff in teaching the guidance curriculum; evaluating and developing the guidance program; and delivering the counseling program to all students throughout the school (Schmidt & Ciechalski, 2001).

Through these efforts, school counselors support students and teachers so that learning can be maximized and students develop into successful, productive citizens. “School counselors help students become more able learners, they assist parents in their supportive roles, and they enable teachers to provide beneficial instruction for all children. In sum, everything a school counselor does, every service rendered, aims at helping students, parents, and

teachers in the process of human development and learning” (Schmidt, 2004, p. xxiii). Additionally, school counselors play a “vital role” in dropout prevention by “providing intervention that will change student behaviors to affect student attendance, discipline and academics” (Williams, 2008). By helping students overcome barriers to school success, the school counselor aids the school in improving students’ achievement and reducing the number of students choosing to drop out.

### *School Social Workers*

The purpose of school social work is, “through the collaboration of schools, families, and communities”, to “provide a comprehensive approach to meeting the needs of students through early identification, prevention, intervention, counseling, and support” (SSWA, 2001). “School social workers assist children so they can be successful in school. The goal of school social work should be to give all children the opportunity and resources to help them succeed academically and socially in a safe and healthy school environment” (Openshaw, 2008, p. 4).

The specific activities of a school social worker include “casework management, group work, providing social-developmental assessments, classroom presentations, crisis intervention, consultation, and making referrals to community agencies” (Kirchofer, Telljohann, Price, Dake, & Ritchie, 2007, p. 608). In doing so, school social workers help support academic achievement and prevent school dropout. These professionals serve as “the critical link for families

and students to community support services” (SSWAA, n.d.). They also conduct home visits to help establish or strengthen communication between families and the school in hopes of improving student achievement (Dupper, 2003; Newsome et al., 2008; Openshaw, 2008).

### *School Nurses*

The mission of school nurses is to advance “the well-being, academic success, and life-long achievement of students. To that end, school nurses facilitate positive student responses to normal development; promote health and safety; intervene with actual and potential health problems; provide case management services; and actively collaborate with others to build student and family capacity for adaptation, self management, self advocacy, and learning” (NASN, 1999).

In essence, school nurses “provide health care in the school to further children’s success in the classroom. The nurse serves as a bridge between health care in the community and the school” (Openshaw, 2008, p. 4). This role is particularly important for those students who have physical barriers to academic success. “For many students, achievement, attendance, and graduation are dependent on access to health- and safety-related services at school” (Taras, Duncan, Luckenbill, Robinson, Wheeler, & Wooley, 2004, p. 111). The logic behind this relationship is described by Costante (2002) as follows: “School nurses influence the health behaviors of students. This, in turn, makes them healthier. Better health then affects school behaviors, and these

behaviors have a direct impact on academic performance” (p. 32). Taken a step further, improved academic performance as a result of school nurse interventions could affect decisions by students regarding dropping out. Therefore, the work of school nurses – as with the other student services team members – can impact academic achievement and dropout rates in schools.

### *School Psychologists*

School psychologists work to “help children and youth succeed academically, socially, and emotionally. They collaborate with educators, parents, and other professionals to create safe, healthy, and supportive learning environments for all students that strengthen connections between home and school” (NASP, 2003). In relation to the other student services programs, “the role of school psychologists is unique in the provision of psychological evaluation” (NASP, 2004, p. 2).

The specific duties of school psychologists typically involve consultation with educators, parents, and other student services staff; evaluation of students for special education services; designing and supporting prevention and intervention activities in schools for students with academic or behavioral problems; and research and planning in the use of evidence-based practices (NASP, 2003).

Regarding psychological evaluations in schools, school psychologists are “primarily responsible for administering any academic and psychological tests with students having learning or behavioral problems, interpreting these test

results, and, as a member of the multidisciplinary team, determine eligibility for special education services” (Dupper, 2003, p. 10). By doing so, “their reports assure that children are provided with programs and adjustments that will ensure success at school” (Openshaw, 2008, p. 4). The result of this work by school psychologists can help students who are having academic difficulties improve in school and, therefore, reduce the potential of school dropout.

### History of Student Services in Public Schools

#### *School Counseling*

Prior to the turn of the twentieth century, “most students attended school only long enough to become literate, with high school graduation and college attendance limited to a few” (Louis & Gordon, 2006, p. 17). The beginnings of student services programming in our nations’ public schools came “in the early 1900s in response to political, social, and economic events stemming from the Industrial Revolution and the influx of immigrants entering the workforce and schools” (Louis & Gordon, 2006, p. 16-17). Loesch and Ritchie (2005) describe the events in our nation’s history during this time as follows:

At the turn of the century, the U.S. was rapidly changing from a rural and primarily agrarian society to an urban and primarily industrial society.

People flocked to cities in the Northeast and Midwest U.S. looking for employment and/or better paying jobs. Out-of-work farmers, minorities, and a large influx of immigrants, mainly from Europe, were among them.

Because schooling was compulsory in these states, large numbers of



children flooded the school systems. There arose fear that these children of immigrants and poor farmers from the South would lead to economic and moral crises. Some even feared that these children would not be educable and therefore would be unemployable. Others feared that their strange new customs might challenge the 'American' moral code.

Therefore, there was a push to create vocational training and 'moral guidance' (p. 5).

The tremendous growth during this period of the Industrial Revolution resulted in "by-products" such as "city slums, ethnic ghettos, and apparent neglect of individual rights and integrity" (Schmidt, 1996, p. 7). In response to these conditions, proponents of the Progressive movement, a reaction to the negative effects of industrial growth, advocated for social reform. Vocational guidance was one aspect of this response" (Schmidt, 1996, p. 7).

The first school counselors were "teachers or administrators who taught 'guidance lessons' on vocational and moral education" (Loesch & Ritchie, 2005, p. 5). These "guidance counselors" were simply responding to the challenges of the time, but ultimately became known as the founders of the school counseling profession, including such educators as Jesse B. Davis in Detroit, Frank Parsons in Boston, and Eli Weaver in New York City (Aubrey, 1977). Therefore, the efforts of the earliest school counselors were primarily to assist students in considering new types of careers that required vocational education in demand in business and industry (Goodman & Young, 2006; Louis & Gordon, 2006; Schmidt, 1996).

This initiative was the beginning of school counselors and student services as a whole working to reduce school dropout.

School counseling grew tremendously as a profession in the 1950s and 1960s due to political and global events. The National Defense Education Act of 1958 was developed as a result of the public outcry in the United States over the launching of Sputnik I by the Soviet Union (ASCA, 2005; Schmidt, 1996).

National studies at the time found that school counselors were necessary to help “encourage students to stay in school, concentrate on academic courses, and enter college” (Schmidt, 1996, p. 13). Therefore, in this effort, “Title V of the NDEA focused specifically on school counseling and guidance services in two important ways. First, it provided funds to help states establish and maintain school counseling, testing, and other guidance-related services. Second, it authorized the establishment of counseling institutes and training programs in colleges and universities to improve the quality of counseling of those who were working with students in secondary schools or of persons who were training to become school counselors” (Schmidt, 1996). The profession of school counseling became firmly established in public schools as a result of the launching of Sputnik and the consequent legislation known as NDEA.

In the 1960s, because “equality and opportunity have been persistent American ideals,...schools quickly assumed a part in helping to give students the chance of a better life” (Louis & Gordon, 2006, p. 17). Emphasis in schools were shifted from addressing the needs of the most able to those of the least able

(Goodman & Young, 2006). “This trend climaxed under President Lyndon Johnson’s Great Society initiatives (variously known as *Title I* and *Chapter I*), which expanded the role of the school in mitigating barriers to students’ achievement that were associated with poverty and race. In many cases, new funds were used to hire social workers, whose functions were primarily to link students in need with services outside of the school” (Louis & Gordon, 2006, p. 17). Subsequently, the Elementary and Secondary Education Act of 1965 (Public Law 89-10) and Public Law 94-142 of 1975 provided funding that supported the growth of student services staffing and services, including the addition of school psychologists (Goodman & Young; Schmidt, 1996).

With these developments, “the once lonely school counselor has been joined ... by additional staff members whose roles vary depending on school need and funding opportunities” (Louis & Gordon, 2006, p. 17). These additional staff members include school nurses who, in conjunction with the school social worker, the school psychologist and the school counselor, form the subgroups under what we know today as student services.

As described previously, the role of the school counselor has evolved over time since its original inception as a “vocational” counselor. Today, the role of the school counselor is to “deliver a comprehensive school counseling program encouraging all students’ academic, career and personal/social development, and helping all students in maximizing student achievement” (ASCA, 2004).

### *School Social Work*

After school counseling, the second student services field that developed in our nation's public schools was school social work. School social work services began in 1906 in several cities in the northeastern United States as an effort to support underprivileged students by serving as a connection between the school and the home (Allen-Meares, 2002, 2006). "In New York City, settlement workers from the Hartley House and Greenwich House thought that it was necessary to know the teachers of children who came to the settlements, so they assigned two workers to visit schools and homes in order to work closely with the schools and community groups to promote understanding and communication. In Boston, the Women's Education Association placed visiting teachers in the schools to foster harmony between the school and home and facilitate the children's education" (Allen-Meares, 2002, p. 5). A similar concept, called the "visiting teacher program" at that time, was initiated by the Psychological Clinic in Hartford (Allen-Meares, 2002, 2006).

The next significant step in the development of the school social work program was the passage of compulsory school attendance laws. Again, Massachusetts and Connecticut were the forerunners in this effort, with every state having its own compulsory attendance law by 1918 (Allen-Meares, Washington, & Welsh, 1996). With the implementation of compulsory attendance laws, "schools were required to expand their facilities in order to provide for larger numbers of children with a greater range of individual abilities and

backgrounds. School social workers played an important role – one of clarifying and sensitizing school personnel to the out-of-school lives of children and how it affects the child” (Allen-Meares et al., 1996, p. 25).

With the Great Depression of the 1930s, school social workers became critical to schools by addressing “adverse social conditions and the physical needs of students” (Dupper, 2003, p. 13). This period was followed several decades later by the *Brown vs. Board of Education of Topeka* decision in 1954 to desegregate school, resulting in schools again facing the challenge of educating more students “whose lifestyles and languages differed from the middle-class orientation of the school (Germain, 1999, p. 34). The school social worker’s role as liaison between the school and the home was again vital during this period of social change. As mentioned previously, the Great Society initiatives of President Lyndon Johnson resulted in new funds used to hire social workers to link students with services outside of the school (Louis & Gordon, 2006).

During the 1980s and 90s, schools again faced the challenge of “educating an increasingly diverse population,” as well as “growing numbers of students with learning and behavioral problems (Dupper, 2003, p. 17). School social workers continued to be looked to by schools for assistance for students in greatest need. As cited by Dupper, Hare and Rome note that the *Improving America’s Schools Act* of 1994 “specified that school social workers be included in a wide variety of programs including drug and violence prevention programs, and programs that address the needs of children with limited English proficiency,

Native American children, and homeless children” (Dupper, p. 17-18). “By the 1990s, the focus of school social work had turned from ‘putting out fires’ to the core notions of prevention and building resiliency” (Louis & Gordon, 2006, p. 17). Despite changes over the years in the role of the school social worker, the original concept of a school-affiliated staff member connecting the home with the school and community with the hope of improving student outcomes has continued to this day.

### *School Nursing*

School nursing in the United States first began in 1894 in Boston as an effort to identify and exclude students with serious communicable diseases from school, such as scarlet fever, diphtheria, pertussis, and measles (Virginia Department of Education, n.d.). As with the growth and development of the field of school social work, compulsory attendance laws had an impact on the burgeoning field of school nursing. At the turn of the twentieth century, an influx of immigrant children into New York City schools was “due to both the city’s role in immigration and the mandatory attendance law” (Kronenfeld, 2000, p. 14). Therefore, “conditions of children related to poor sanitation, such as ringworm, impetigo, conjunctivitis, and head lice, were major problems in many schools in New York City” (Kronenfeld, p. 14). While the New York City Department of Health tried to exclude children identified as having contagious conditions from school by sending them home, this effort was unsuccessful, as these children were untreated and played in their home neighborhoods outside of school hours

with the healthy school-aged children (Kronenfeld). In an attempt to address this problem, experimental programs were implemented in 1902 in several New York City schools that utilized a school-based nurse to treat the children for health problems, as well as to help parents learn how to create more healthful conditions in their home (Kronenfeld). "By 1903, the number of children excluded from classes for health reasons dropped by 90% due to the presence of the nurses" (Kronenfeld, p. 14).

This initiative was so successful in documenting the effect that school nurses could have on absenteeism that "school districts across the country are beginning to hire nurses to work in schools" (NASP, 2008). "School nurses began to assume a major role in the daily medical inspection of students, treatment of minor conditions, and referral of major problems to physicians. By 1911, there were 102 cities employing cadres of school nurses" (Allensworth, Lawson, Nicholson, & Wyche, 1997, p. 35).

In the 1940s, the focus of school nursing shifted from medical examinations and interventions to prevention, communicable disease control, and health education (Virginia Department of Education, n.d.). Additionally, school nurses during this time helped develop "innovations such as specialized classes for handicapped, those crippled by polio, vision classes, deaf or hard of hearing, lip reading classes, speech therapy" (Virginia Department of Education, slide #8).

With the 1960s, “the Great Society and War on Poverty programs marked a new level of federal involvement in the schools and made new health and social services funds available....Title I of the Elementary and Secondary Education Act tripled the number of school nurses, and a new nursing role—the school nurse practitioner—began to emerge” (Allensworth et al., 1997, p. 45). With this role, “the clinical functions of school nurses were expanded to include primary care services with the nurses working in close collaboration with physicians” (Allensworth et al., p. 45). Since the mid- to late-1980s, there has been a renewed focus on the potential for schools to address health and social problems (Allensworth et al.). An outcome of this renewed focus is a greater demand for nurses and school health services in public schools.

### *School Psychology*

“The origins of school psychological services can be traced to an era of social reform in the late nineteenth and early twentieth centuries” (Fagan & Wise, 1994, p. 20). Between 1890 and 1930, “the condition of U.S. education in that era of heavy immigration, compulsory education, and child labor laws created the need for specialized school services to work in conjunction with the small but growing services in remedial and special education” (Fagan & Wise, p. 24). “By 1910, some special education services were in place in many urban and some rural communities...[where] ‘experts’ were needed to assist in selection and placement of children in these services. Thus, the school psychologist as the ‘gatekeeper’ for special education evolved” (Battle Ground Public Schools, n.d.).



Interwoven with the beginnings of school psychology was “the development of psychological and educational tests and the interest of school systems in segmenting their student population, especially according to ‘intelligence’” (Fagan & Wise, p. 31). During this time, the number of school psychologists grew from 0 in 1890 to approximately 200 in 1920 (Fagan & Wise).

During the 1950s and 60s, the “baby boom” was a result of the conclusion of World War II and the prosperity of the nation at that time (Merrell, Ervin, & Gimpel, 2006). “As the number of school children expanded greatly, so did the numbers of students who had disabilities or who otherwise struggled with respect to their academic and behavioral adjustment in the school setting” (Merrell et al., 2006, p. 31). Thus, the demand for school psychologist to aid schools in identifying students with these academic and behavioral difficulties grew.

In 1975, Public Law 94-142, also known as the Education of All Handicapped Children Act (EHA), legislated that school districts must employ school psychologists (Goodman & Young, 2006). Additionally, this landmark civil rights legislation “required that states provide free and appropriate public education of all individuals from 3 to 21 years of age. This act required that all children attend school, including children who previously might not have received public education due to their physical, emotional, or intellectual disabilities” (School Psychology, 2009, ¶ 5). Later, EHA was renamed the Individuals with Disabilities Education Act (IDEA) in 1990 and the Individuals with Disabilities Education Improvement Act (IDEIA) in 2004 (Individuals with Disabilities

Education Act, 2009). Since the passage of the Education of All Handicapped Children Act, school psychologists have been a mainstay in public schools throughout the nation to help ensure that the educational needs of all students are being appropriately met.

#### Policy for Student Services Staffing

With regard to student services staffing, Goodman and Young (2006) point out that “teachers like principals, are a constant within every public school district across the United States. What can vary across school districts is the type of extra curricular support provided to assist teachers and principals in their attempts to enhance student achievements” (p. 5). Many school districts and states, though, lack policies to support and fund student services staff in public schools. According to data collected by Brener, Weist, Adelman, Taylor and Vernon-Smiley (2007, p. 490), policies for student services staffing and, in particular, school counselors are inconsistently adopted across states, districts, and school levels:

- 21.3% of states have policy stating elementary schools will have a full-time counselor;
- 33.2% of districts have policy stating elementary schools will have a full-time counselor;
- 27.7% of states have policy stating middle schools will have a full-time counselor;

- 51.1% of districts have policy stating middle schools will have a full-time counselor;
- 38.3% of states have policy stating high schools will have a full-time counselor;
- 62.9% of districts have policy stating high schools will have a full-time counselor;

This inconsistency in student services staffing policies exists despite recommendations from national organizations representing the various student services program areas.

The American School Counselor Association, as well the No Child Left Behind Act, recommends a minimum of one school counselor for every 250 students (ASCA, 2004; Raines 2008). Based upon a report to the North Carolina Joint Legislative Education Oversight Committee studying the role of school counselors in dropout prevention, it was found that the ratio of school counselors to students in North Carolina for grades 6-12 schools in 2007 was 1:319.64 (NCDPI, 2007b). While this report indicates that, across North Carolina, the school counselor-to-student ratios are far from the level recommended by the American School Counselor Association, “does this suggest that counselors in these types of situations cannot be effective? Not necessarily, but it does suggest that counselors in these schools will need to establish more limited goals and alter their roles to fit the situation so that they can maximize their impact” (Brown & Trusty, 2005, p. 163). Schmidt (2003) notes that while

recommendations for school counselor-to-student ratios are usually inconsistent across professional associations and accrediting organizations, recommendations are generally one school counselor for every 300 to 500 students enrolled. However, as cited by Steward, Neil and Diemer (2008), Marino, Sams, and Guerra (1999) reported that the nationwide ratio is 1 counselor per 513 students” (Steward et al., 2008, p. 19).

The School Social Work Association of America recommends a minimum of one school social worker for every 400 students (SSWAA, 2005). However, No Child Left Behind recommends one school social worker for every 800 students (NCDPI, n.d.a; Raines, 2008).

The National Association of School Psychologists and the No Child Left Behind Act recommend a minimum of one school psychologist for every 1,000 students (NASP, 2006; Raines, 2008). In 2004, the ratio of school psychologists to students in the United States was 1:1,653 and in North Carolina was 1:2,507 (NASP, 2005).

Finally, the National Association of School Nurses, the American Academy of Pediatrics, and the Centers for Disease Control collectively recommend a minimum of one school nurse for every 750 students in the general population; one school nurse for every 225 students in populations that may require daily professional school nursing services and interventions; and one school nurse for every 125 students in populations with complex health care needs (North Carolina Department of Health and Human Services [NCDHH], 2007). During the

2006-2007 school year, the ratio of school nurses to students in North Carolina was 1:1,340 (NCDHHS, 2007).

While policies supporting the student services staffing are not consistently found in states or school districts, each professional field within the umbrella of student services has data supporting the need for staffing increases. As noted by the North Carolina State Health Director, Leah Devlin, “a growing body of research tells us that today’s students...are bringing to school many complex health needs that interfere with their ability to learn and reach their full potential. We cannot afford to leave these needs unmet because we have too few school nurses” (NCDHHS, 2005, p. 2). The School Social Work Association of America emphasizes the need to increase the number of school social workers in public schools “in order to more effectively assist students’ focus on learning, remove barriers to achievement, decrease school violence, and improve the school climate for all students and staff” (SSWAA, 2005, p. 1).

The National Coalition on Personnel Shortages in Special Education & Related Services found that there is “not enough funded positions to serve the growing number of students in need”, noting that “this shortage of positions makes it difficult for quality services to be provided consistent with the recommended standards of a profession. Some of the professionals impacted include school counselors, school social workers, audiologists, occupational and physical therapists, and school psychologists” (National Coalition on Personnel Shortages in Special Education & Related Services, n.d.).

A survey of parents, teachers, students, and administrators conducted by the California Department of Education determined that “correlations between pupils-to-pupil support personnel ratios were not found to be significant”, but did indicate that “lower ratios were related to high academic achievement in elementary school, but not in unified or high schools” (California Department of Education, 2003, p. 3). Though growing public opinion and research indicate that there is a need for more student services staff in schools, such changes would necessitate increases or redirection of funds for public schools to pay for these positions.

#### Policy for Funding Student Services Staffing in North Carolina

Within the state of North Carolina, policies for the allotment of student services staff are broadly defined, allowing for the discretion of school administrators and education leaders in school districts to determine the rate of student services staffing. A potential result of this approach is inconsistent implementation of services and staffing across school districts. The *2007-2008 Allotment Policy Manual* (NCDPI, 2007a) for the public schools of North Carolina lists several potential funding categories that may be utilized for the provision of student services staff. Within this document, student services fall within the category of “instructional support personnel,” defined as certified “teachers, librarians, school counselors, school psychologists, school nurses, and school social workers” (NCDPI, 2007a, p. 59). The funding categories available for student services staffing are as follows (NCDPI, 2007a):

1. "Instructional Support Personnel – Certified" (pp. 58-60)
2. "At-Risk Student Services/Alternative Schools" (pp. 26-27)
3. "Disadvantaged Students Supplemental Funding" (pp. 49-50)
4. "Child and Family Support Teams – Nurses" (pp. 35-36)
5. "Child and Family Support Teams – Social Worker and Other" (pp. 37-38)

The funding category for "instructional support personnel" provides for one position for every 200.10 students (NCDPI, 2007a, p. 58). While it is "the intent of the General Assembly that the positions must be used first for counselors, then for social workers", school districts may choose to use these allotted positions for: (1) "teachers to reduce class size in all grades"; (2) transfer to dollars for non-certified instructional support personnel, including teacher assistants; (3) librarians or media coordinators; (4) transfer to dollars for contracted services for school nurses and/or school psychologists (NCDPI, 2007a, p. 58-59). Therefore, each school district within the state of North Carolina has the discretion to determine how many of their allotted positions through these funds will be dedicated to student services positions (NCDPI, 2007b).

For the category entitled "at-risk student services/alternative school", funding is provided to "identify students likely to drop out" and support these students through alternative education, remediation, early intervention, and alcohol and drug prevention (NCDPI, 2007a, p. 26). The level of these funds allotted to school districts is based upon several factors, including the number of

high schools in the district, the overall student enrollment, the number of students identified as living in poverty or “low wealth”, and whether the district has a program for the treatment of children with alcohol or substance abuse problems (p. 26). One of the priorities listed for this funding category is “to provide instructional positions or instruction support positions” (p. 27). As noted earlier, “instructional support positions” include school counselors, school social workers, school nurses and school psychologists (p. 59).

For “disadvantaged students supplemental funding,” school districts must develop and have approved at the state level a plan for how they will use these funds to “meet the needs of disadvantage students” (NCDPI, 2007a, p. 49). This plan must address how funds will be used to support students “that are not achieving grade-level proficiency” (p. 49). The formula used to calculate how these dollars are allocated to school districts involves the utilization of data on the number of students in poverty or “low wealth” within each district (p. 49). As with at-risk student services/alternative schools funds, one of the priorities listed for disadvantaged students supplemental funding is “to provide instructional positions or instruction support positions” (p. 27).

Since 2006, the state of North Carolina has piloted an initiative to support the development and continuation of child and family support teams within 100 schools across 21 school districts (H.N. Lee, J.S. Atkinson, & C.H. Odom, personal communication via memo, November 29, 2005; North Carolina Department of Health and Human Services, 2009; Troop & Tyson, 2008). Child



and family support teams “identify and coordinate appropriate community services and supports for children at risk of school failure or out-of-home placement in order to address the physical, social, legal, emotional, and developmental factors that affect academic performances” (North Carolina State Legislature, 2005, p. 34). These teams consist of a school social worker and a school nurse who work together at their assigned school full-time (Troop & Tyson). There are two funding categories that support staffing for this pilot initiative, entitled “child and family support teams – nurses” and “child and family support teams – social worker and other” (NCDPI, 2007a, pp. 35-38).

In addition to these state funding categories, some school districts in North Carolina allocate local and federal funds for student services staff (NCDPI, 2007b). Examples of federal funds that may be applied to hiring select student services staff include Title I Part A funds from the Elementary and Secondary Education Act, Perkins Vocational & Technical funds, funds to support the Individuals with Disabilities Education Act or IDEA, McKinney-Vento homeless assistance funds, and Safe & Drug-Free School grant funds, just to name a few (NCDPI, 2007a; Parsad, Alexander, Farris, & Hudson, 2003; U.S. Department of Education, 2004). Besides federal, state, and local funds, grant funding through community, corporate and private foundations may support student services in some school districts (Poirier & Osher, 2006).

Through the utilization of the aforementioned funding sources and categories, student services staffing decisions are left to the discretion of school

administrators and education leadership in school districts across North Carolina. Therefore, school districts – based upon factors such as the vision of the leadership of the district and the evidence presented regarding the effect of student services on student outcomes to the leadership – may have varying levels of student services staffing in their school. An increase in the research base supporting the efforts of student services staff on academic achievement and school dropout may influence funding and staffing decisions by school districts.

#### Research on the Effect of Student Services on Student Academic Outcomes

Currently, not much data exist to help school boards and administrators prioritize funding for student services staffing during difficult budgetary seasons, particularly in relation to the impact these services have on improving student performance (Adelman & Taylor, 2006; Carrell & Carrell, 2006; Franklin, 2001; Goodman & Young, 2006; Jacques & Brorsen, 2002; Kelly, 2008). However, the amount of research on the effect of student services programs and staff on student academic outcomes seems to be slowly on the rise. While Whiston (2002) felt that there was a “significant dearth of research” with regard to student services at that time, Dimmitt et al. (2007) have since taken note that while the effect of interventions by student services staff – specifically school counselors – on academic achievement have not been well-studied, “increasingly researchers are focusing on this concern” (Dimmitt et al., p. 64). A brief review of the existing

research within the past ten years on the effect of student services on academic outcomes follows.

In 1998, Whiston and Sexton conducted a comprehensive review of outcome research on school counseling published between the years 1988 and 1995. While they found only 50 published studies during this time on school counseling outcomes for student, their results from examining these studies showed that there is tentative support for school counseling having a positive influence on academic achievement (Whiston & Sexton, 1998). Additionally, based upon these studies, the “broad range of activities school counselors perform often result in positive changes for students” (Whiston & Sexton, 1998, p. 422).

Lapan et al. (1997) conducted a five-year, statewide study in Missouri examining the impact of a comprehensive high school counseling program on student outcomes. The results of their study showed that students who attended schools with more fully implemented comprehensive school counseling programs reported earning higher grades, perceived their school climate more favorably, and felt safer in school (Lapan et al.). Lapan, Gysbers and Petroski (2001) later conducted a similar study focusing on the effects of a fully implemented comprehensive counseling program on seventh-graders in middle school. The results of this subsequent study showed that a fully implemented comprehensive counseling program led to student reports of earning higher grades, having better relationships with their teachers, believing that their education was more relevant

and better prepared them for the future, holding a more positive view of school, and feeling safer at school (Lapan et al., 2001).

A study conducted by Edmondson and White (1998) demonstrates that a dropout prevention program that involves “both academic tutoring and group counseling can result in improvement for students in the areas of academic achievement, behavior and self-esteem” (p. 46). Career development strategies implemented by school counselors were found to help improve student attendance and prevent dropouts (Herring, 1998). Additionally, comprehensive guidance programs were found to have a significant impact on academic achievement (Otwell & Mullis, 1997).

In a study conducted in the United Kingdom by Bagley and Pritchard (1998), statistically significant reductions in problem behavior and school exclusion resulted from the interventions of school social workers. Additionally, they found through an analysis of school exclusion, or school suspension, that the use of school social workers was highly cost-effective (Bagley & Pritchard).

Tobias and Myrick (1999) conducted research demonstrating that, overall, school counselors had an impact on school attendance, grades, and disciplinary problems for students. School social work services have been shown to reduce violent and aggressive behaviors (Whitfield, 1999) and improve attendance (Baker & Jansen, 2000).

A review of literature conducted by Early and Vonk (2001) found 21 studies that document the success of school social workers’ services to student

outcomes. Additionally, two research studies conducted on school social work groups in junior high schools found improvements in student academic performance due to the intervention of a school social worker (Newsome, 2004, 2005). In a 2008 study, Diehl and Frey reported that, after referral to and intervention by school social workers for students with problem behaviors in school, teachers and parents reported a decrease in problem behaviors.

Sink and Stroh (2003) completed a study examining whether the presence of a comprehensive developmental guidance counseling program impacted students' academic achievement test scores. They found that early elementary school students do better academically when there is a comprehensive developmental guidance counseling program (Sink & Stroh).

Brigman and Campbell (2003) found that "school counseling interventions that focus on the development of cognitive, social and self-management skills can result in sizable gains in students' academic achievement." A follow-up study by Webb et al. (2005) supported their original research that counseling interventions resulted in academic and behavioral improvements for students.

The California Department of Education (2003) conducted a survey of district stakeholders regarding student services staffing ratios. The results of the survey showed that lower student services staff-to-student ratios were considered to be related to higher school safety, higher academic achievement in elementary schools, and higher standardized test scores in mathematics in high schools (California Department of Education).

Walsh and Murphy (2003) note that “in recent years, research has clearly demonstrated how interventions that improve children’s health also contribute in a positive manner to their academic performance”. School nurses help provide health interventions to students, thus contributing to improved academic outcomes. As such, Maughan (2003) conducted a research synthesis of articles that link school nursing to academic outcomes. The findings of this synthesis indicate that “nursing interventions targeted at specific populations...have had significant effects” (p. 163). Additionally, Maughan found through these studies that there is a relationship between the efforts of school nurses and improvements in school attendance.

Guttu et al. (2004) conducted a study in 21 school districts in eastern North Carolina examining the impact of school nurse-to-student ratios. Their findings show that school districts with better ratios had outcomes such as improved services to students with asthma and diabetes, more counseling services to students with depression and unintended pregnancy, and greater follow-up for school related injuries and vision problems (Guttu et al.). All of these health conditions can negatively impact a student’s academic performance in school.

Also supporting the work of school nurses, Allen (2003) and Wyman (2005) both found that their efforts led to a significant reduction in the number of students leaving school early. “The results of this study indicate school nurses may positively influence student school success” (Wyman, p. 350). Telljohann et

al. (2004) found that students with asthma at schools with full-time school nurses missed significantly fewer school days than students with asthma at schools with only part-time nurses. "School nurses assist schools in meeting achievement standards by promoting school attendance which, in turn, supports high school completion" (Costante, 2006, p. 145).

In a school district in Missouri, Cooper (2005) reported that a focus on school health services led to improvement in student outcomes. More specifically, significant funding was directed by district leadership toward health services, including school nursing (Cooper). The result of this effort was improved student attendance, lower dropout rates, and a decrease in disciplinary referrals, suspension and expulsions (Cooper).

A study conducted by Thiede (2005) demonstrates the importance of school social workers in developing partnerships between parents and schools, ultimately resulting in improved academic skills in students. This is supported by other studies that have found that attendance and academic performance can be improved through increased family engagement in schools, which is directly in line with the role of the school social worker (Epstein & Sheldon, 2002; Henderson et al., 2002; Openshaw, 2008; Sheldon, 2007).

With regard to school psychologists, a study by Gregor (2005) found that select interventions led jointly by teachers and school psychologists resulted in a reduction in test anxiety. With reduced anxiety, there is the potential for increased performance.

Additionally, an article by Christo (2005) notes the key role that school psychologists play in a three-tiered, response to intervention or RTI model for improving student reading skills. School psychologists in this model support early intervention in reading through their experience in assessment, intervention design, and consultation (Christo). A case study by Henley and Furlong (2006) also examined the response to intervention model as led by a school psychologist. More specifically, Henley and Furlong demonstrate academic progress monitoring while targeted interventions are being provided to students who are having academic difficulties in specific areas of learning. "The literature on RTI models indicates that they alone can remediate the majority of students experiencing academic difficulties, especially in the early grades" (Fiorello et al., 2006, p. 848). As school psychologists lead these efforts in implementing and carrying out the RTI model, they have an impact on student academic outcomes.

In addition to academic interventions, a study by Hawken and Hess (2006) demonstrates that targeted behavioral interventions led by the school psychologist result in a reduction in problem behavior by students. Such an initiative led by a school psychologist should ultimately result in more time on task in the classroom and, therefore, improved academic standing. As evidenced by the findings of Christo (2005), Gregor (2005), Hawken and Hess, and Henley and Furlong (2006), Goodman and Young (2006) found that "the number of psychologists employed by a public school district demonstrate a significant and decisive impact on achievement" (p. 3).



A study by Engelke et al. (2008) was conducted with 114 children with asthma, diabetes, severe allergies, seizures, or sickle-cell anemia in five school districts in eastern North Carolina. The results of this study indicate that case management efforts of school nurses with these students led to improvements in grades, classroom participation, and student self-reports of higher quality of life (Engelke et al.).

Newsome et al. (2008) found that school social work services had a statistically significant impact on reducing various risk factors related to truant behaviors among students. With increased attendance, there is the potential for increased academic performance. A meta-analysis of 21 school social work intervention studies resulted in positive effect sizes for academic performance, demonstrating that the efforts of school social workers make a difference with academic outcomes for students (Franklin, Kim, & Tripodi, 2009).

A study conducted in Washington State by Sink et al. (2008) found that student achievement was significantly higher in schools that have had a comprehensive school counseling program for at least five years versus those schools with a relatively new or no comprehensive school counseling program.

In contrast to the research above, a study conducted by Jacques and Brorsen (2002), two economists, examined whether expenditures in several areas – including student support services – had an impact on student achievement. They found that expenditures on student support services actually had a negative relationship to student achievement (Jacques & Brorsen).

While the aforementioned studies provide a brief overview of the potential impact of student services on academic outcome, other personal, social and emotional factors that impact achievement are also addressed by student services staff. “Poor nutrition, impaired vision or hearing, dental pain, sleep deficiency, substance abuse, anxiety about home life, anxiety about relations with peers, exposure to violence, and any unaddressed symptoms are examples of health and safety issues associated with less than optimal achievement in school” (Taras et al., 2004, p. 3). By helping students meet their basic safety and health needs, both mentally and physically, student services staff can help improve students’ academic performance in school (Taras et al.; Troop & Tyson, 2008; Walsh & Murphy, 2003).

As several of the studies mentioned in this review of literature have referred to student outcomes in the form of academic performance, the next section will examine how academic performance is measured in North Carolina through the ABCs accountability model.

#### The ABCs Accountability Model in North Carolina Public Schools

As this study compares student achievement outcomes across school districts with varying levels of student services staffing-to-student ratios, it is important to examine more closely how student achievement is measured in our sample. This is best accomplished through a review of school accountability in North Carolina within the historical context of the past two decades. Included within this historical review is an outline of the current achievement and

accountability model that is necessary for improved understanding of the methodology and results of this study.

When discussing school accountability nationally, inevitably North Carolina's ABCs of Public Education will be mentioned (NCDPI, 2005). The beginnings of this accountability model came about during the 1980s when, as an effort to improve and standardized instruction across school districts throughout the state of North Carolina, the State Board of Education approved a standard course of study for each grade level and subject area (Hunt, 2001). To support this effort, the Education Commission on Standards and Accountability, established in 1993, set out "to determine what students need to know and be able to do to graduate and get a good job. The commission had a series of well-attended hearings around the state asking businesses and employers what knowledge and skills were needed in jobs" (Hunt, p. 51). In order to ensure that students were being prepared to graduate with the knowledge deemed necessary to enter the workforce, as covered in the standard course of study, the quality of instruction in the public schools needed to be assessed. In 1995 the General Assembly of North Carolina (NCDPI, 2008f):

Directed the State Board of Education (SBE) to develop a restructuring plan for public education. The State Board conducted an in-depth study involving public hearings, surveys and interviews; reviewed current mandates and operating procedures; and undertook a major organizations analysis to relate all education operations to the

mission. In May 1995, the new ABCs of Public Education outlined the framework for a dramatic restructuring (p. 1).

This restructuring under the ABCs of Public Education was “North Carolina’s comprehensive plan to improve public schools. The plan is based on three goals: (1) strong accountability, ‘A,’ (2) mastery of basic skills, ‘B,’ and (3) localized control, ‘C’” (NCDPI, 2009a, p. 24). During the 1995-1996 school year, a pilot of the ABCs testing plan was conducted in 108 schools across ten districts in North Carolina (NCDPI, 2008f). Official implementation of the ABCs across the entire state for grades 3 – 8 occurred during the 1996-1997 school year after the General Assembly approved the ABCs plan (NCDPI, 2008f).

The major component for schools with regard to the ABCs was a series of end-of-grade (EOG) tests aligned to the North Carolina Standard Course of Study (NCDPI, 2005; NCDPI, 2008a). The North Carolina EOG Tests of Reading and Math are state-required, multiple-choice exams administered at the end of the school year to all students in grades 3 – 8 (NCDPI, 2008e). “These curriculum-based achievement tests are specifically aligned to the North Carolina Standard Course of Study and include a variety of strategies to measure the achievement of North Carolina students” (p. 1). Students are deemed to be “proficient” if they met predetermined performance standards comparing their scores on the NC end-of-grade test to that of grade-level expectations (NCDPI, 2008e). There are four achievement levels on the NC end-of-grade tests – I, II,

III, and IV, with students scoring at Level III and IV being considered at or above grade-level expectations, or “proficient” (NCDPI, 2008e).

Not only were the proficiency levels of students examined using the NC end-of-grade tests, but so too were the level of academic growth that a student made from one year to the next. Growth is “an indication of the rate at which students in the school learned over the past year. The standard is equivalent to a year’s worth of growth for a year of instruction” (NCDPI, 2008a, p. 3). For a public school student in North Carolina to demonstrate growth, he or she is “expected to perform as well, or better, on the end-of-grade (EOG) assessment for the current year as she or he did, on average, during the previous two years” (NCDPI, 2008a, p. 3).

With proficiency and growth measured for each student, this allowed for overall “school accountability [to be measured] twofold: first, the percent of all test takers who scored at achievement level III or IV in the school, and, second based on the average student growth from one grade level to the next” (NCDPI, 2005, p. 1). North Carolina was one of the first states in the U.S. to use a growth model for student achievement (NCDPI, 2005, p. 1).

In order to provide incentives to schools and staff to meet these new accountability standards, performance bonuses were adopted by the state and provided \$1,000 to certified staff and \$500 to teacher assistants in schools achieving what was determined to be exemplary, or high, growth (NCDPI, 2008f). Additionally, to aid in the transition to the new ABCs program, state assistance

teams were formed and assigned to low-performing schools in order to help them meet the new standards (NCDPI, 2008f).

During the 1997-1998 school year, the next steps of the ABCs were implemented with the high school accountability model (NCDPI, 2008f). The high school model included results on five mandated end-of-course tests that are similar to the end-of-grade tests, but specific to the subjects' standard course of study, a high school writing test, and percentages of students completing a College Prep/College Tech Prep program of study (NCDPI, 2008f). Also during the 1997-2008 school year, the incentive pay program was modified to provide \$1500 for certified staff and \$500 for teacher assistants in schools making High Growth, or \$750 and \$375 respectively in schools making Growth (NCDPI, 2008f). Results of district and school outcomes as measured by the ABCs were provided to the public in the form of report cards (NCDPI, 2008f).

With the passage of No Child Left Behind at the federal level, several changes to the ABCs testing program were made for the 2002-2003 school year. Most notably, Adequate Yearly Progress, or AYP, was added to measure "whether the students in a school as a whole and in each identified subgroup met the performance standards set by [the] state" (NCDPI, 2005, p. 6). AYP is an effort to bring attention to the need to reduced achievement gaps that exists between subgroups of students based on their respective gender, race, or disability (NCDPI, 2008f).

Over the years, revisions to the ABCs testing program have been made, including numerous changes to tests to reflect changes in the standard course of study (NCDPI, 2008a). This includes the addition of alternative assessments to the end-of-grade and end-of-course tests for select students with disabilities to more fairly and appropriately assess the amount of learning and growth for each student (NCDPI, 2008a).

While North Carolina continues to be a leader in the nation with regard to accountability in public education, barriers to learning and student achievement remain. School dropout is one of the potential results of these barriers for students in public education. This topic is examined further in the next section of chapter 2.

### The Dropout Crisis in Public Schools

While the problem of students dropping out of school is not a new concern for educators, efforts to decrease the dropout rate remains one of the major challenges facing public schools in the United States today (Lunenberg, 2000; Rumberger, 1987). National legislation such as the No Child Left Behind Act has brought renewed attention to this issue, as it requires states to measure rates of dropout and graduation as part of the accountability system (Kaufman, Alt & Chapman, 2004; Lehr, Johnson, Bremer, Cosio, & Thompson, 2004). As found by the Alliance for Excellent Education (2007), the United States ranks eighteenth in high school graduation rates among developed countries. With the 2005-2006 school year, the percentage of high school students dropping out of

school nationally was 9.3% (Planty et al., 2008). In North Carolina for the same school year, "one out of every 20 North Carolina high school students dropped out of school, jeopardizing their opportunity for future success" (NCDPI, 2008d). North Carolina ranks 45<sup>th</sup> nationally in terms of graduation rates (Manzo, 2006). Educators and researchers are estimating that nationwide nearly 1 out of 3 public high school students will not graduate, with rates for Latinos and African-Americans predicted to be closer to 50% (Bridgeland, Dilulio, & Morison, 2006; Education Week, 2007; Thornburgh, 2006). Franklin, Kim and Tripodi (2008) estimate that "the percentage of students who do not graduate from high school at the end of a 13-year program of study ranges from 11% - 28% for certain at-risk student populations" (p. 35). As the population continues to grow in the United States, more at-risk students who are in danger of becoming a dropout statistic will enter our public education system (Lunenberg, 2000).

School dropout is a highly visible sign of a society that has failed to prepare its youth for successful transition into adulthood (Kushman et al., 2000, p. 471). The negative effect of school dropout on the individual student as he/she enters the adulthood includes possessing a low level of academic skills that prevent a steady or an adequate income (Prevatt & Kelly, 2003; Rumberger, 1987). Studies show that high school dropouts will make thousands of dollars less annually than those who graduate from high school (Kaufman et al., 2004; Rumberger & Thomas, 2000; Sheldon, 2007; Smink & Heilbrunn, 2006; USA Today, 2008). More specifically, based upon data from the American Community



Survey of the U.S. Census Bureau (2005), high school dropouts make approximately \$9,500 less than high school graduates annually and approximately \$380,000 less over the course of forty years of employment. And this assumes that dropouts will find work, as Thornburgh (2006) indicates that “nearly half of all dropouts age 16 to 24 are unemployed” (p. 38). As the financial implications of school dropout are serious, so too are other implications for students. School dropout is correlated with poor physical and mental health, as well as increased criminal activity and dependence on welfare (Baum & Payea, 2004; Belfield & Levin, 2007; Bridgeland et al., 2006; Educational Testing Service, 1995; Lehr, Clapper & Thurlow, 2005; McMillen & Kaufman, 1996; Rumberger, 1987, 2001; Rumberger & Thomas, 2000; Stewart, 1999; Thornburgh, 2006).

While the result of school dropout has a direct impact upon the individual, the consequences for society are significant as well. In 2008, the North Carolina General Assembly’s Committee on Dropout Prevention stated that “in order for our citizens and the State to thrive in a global, knowledge-based, economy, it is imperative that more of our students graduate from high school with the knowledge and skills needed for postsecondary education or high-skilled employment” (NCDPI, 2008c, p. 3). A study by the Alliance for Excellence in Education found that high school dropouts in one state alone cost nearly \$4 billion in lost wages and taxes over their lifetime (Community College Week, 2008). Nationwide, “the government would reap \$45 billion in extra tax revenues

and reduced costs of public health, of crime and justice, and in welfare payments if the number of high school dropouts among 20-year olds...were cut in half" (Bill & Melinda Gates Foundation, 2006, p. 5). As noted by Cairns and Cairns (1994), the impact of the growing dropout dilemma has implications beyond the individual student: "Pension funds, Medicare, and social security will work only if the economy itself is healthy. A major problem is looming because a significant proportion of the members of the next generation in the United States may be ill-educated and otherwise unwilling or unable to fulfill the needs of the society for a modern workforce. Where this is the case, the whole society will suffer" (p. 167). Balfanz and Bridgeland (2007) estimate that if the number of dropouts were reduced by 50%, taxpayers would save approximately \$45 billion annually. This includes the cost of imprisonment, as nearly "70% of inmates in North Carolina's state prisons were high school dropouts" at a cost of \$723 million annually to state taxpayers (Harrill, 2009, p. 1).

The implications for the high rate of school drop out to society are numerous and troublesome. Levin's (1972) historic study on school dropout revealed seven social consequences for society: forgone national income, forgone tax revenues, increased need for social services, increased crime, reduced political participation, reduced intergenerational mobility, and poorer levels of health. The dropout problem was estimated to have caused Levin's male cohort to lose \$237 billion in income and \$71 billion in foregone government revenues.

The difficulty tackling the school dropout issue begins with the historical inconsistency in calculating dropout totals. Previously, dropout data have been “notoriously unreliable” because “states, school districts, and federal research may all use different methods and different definitions to tally up how many students have dropped out of school” (Viadero, 2001). Reimer and Smink (2005), confirm that there have been many different ways that a dropout rate has been calculated. “It is extremely difficult to compare dropout rates at the local, state and national level because of the different methods of calculation” (Reimer & Smink, p. 1). For example, public schools in Houston, Texas utilized “leaver codes’ –dozens of excuses, such as pregnancy and military services, that were often applied to students who were later reclassified as dropouts by outside auditors” (Thornburgh, 2006, p. 33). This method of miscoding student withdrawals from school causes dropout rates to be inaccurately reflected as lower than they actually are. Fortunately, with the development of the common definition of a dropout and a common method for calculating the dropout rate, the National Governors Association and the National Center for Education Statistics have provided consistency across states with regard to a single formula for dropout calculation (Almeida, Johnson, & Steinberg, 2006; Bridgeland et al., 2006; Jerald, 2007; Kushman et al., 2000; Lehr et al., 2005; Planty et al., 2008; Thornburgh).

In addition to variations in the calculation of dropouts and the relative short history of a common definition of a dropout, research on dropouts is also limited

“because there are a large variety of factors that influenced dropouts (student, family background, school, and community characteristics), and because these factors are highly intercorrelated” (Kushman et al., 2000, p. 479). “Reasons for dropping out of high school often overlap in a way that makes it difficult to develop a singular profile of at-risk school dropouts” (Franklin et al., 2008, p. 35). School dropout affects a wide variety of students with a variety characteristics (Almeida et al., 2006; Flowers & Hermann, 2008). Additionally, there is no single reason why students decide to leave school, as it varies based on individual factors (Ahn, Wyant, Bonneau, Rosch, & Owen, 2008; Bridgeland et al., 2006; Flowers & Hermann, 2008). As Rumberger (1987) points out, “There is no ‘typical’ dropout” because different types of dropouts leave school for different reasons” (p. 112). Therefore, great difficulty exists in thoroughly “examining or isolating the influence of any one factor” (Kushman et al., 2000, p. 479).

While no single profile can accurately capture every dropout, a trend in the data that some researchers point to as a possible predictor for school dropout is socioeconomic status. At least half of dropouts nationwide attend schools with high poverty rates (Balfanz & Legters, 2004). Additionally, “students living in low-income families were six time more likely than their peers in high-income families to drop out of high school” (Kaufman et al., 2004, p. iv).

Despite the difficulties in developing a standard profile, early identification of students at-risk for dropping out in conjunction with appropriate interventions is being suggested throughout the literature as a means for prevention. Research

conducted in Philadelphia public schools by Neild, Balfanz, and Herzog (2007) indicates that students who drop out of school “send strong distress signals for years. These students are metaphorically waving their hands and asking for help. By paying attention, schools and districts can develop interventions that can help keep potential dropouts on track to graduation” (p. 28). For sixth-grade students in the study conducted by Neild et al. (2007), there was a 75% likelihood of eventually dropping out of school if these displayed one of the following “distress signals”: “a final grade of F in mathematics; a final grade of F in English; attendance below 80% for the year; a final ‘unsatisfactory’ behavior mark in at least one class” (p. 29). Similar results were found for 8<sup>th</sup> grade students, with students with one or more of these indicators as having a greater than 50% likelihood of school dropout (Neild et al.). For 9<sup>th</sup> grade students, “those who earned fewer than two credits or attended school less than 70% of the time had at least a 75% chance of dropping out of school” (Neild et al., p. 30).

In North Carolina, a study by Sparks, Johnson, and Akos (2008) found that ninth grade students are more likely to dropout if they possess at least one of the following factors: previous grade retention, failing to have enough credits to be promoted to tenth grade, scoring below grade level on standardized testing in mathematics in 8<sup>th</sup> grade, or receiving a long-term suspension. These common indicators – attendance, discipline and academics – are similar to those identified by Neild et al. (2007) as being potential identifiers for future school dropout.

Additional research supports these three indicators as being predictive of future school dropout. Studies by Kemp (2006), Roderick (1994), and Rumberger (1987), found that poor academic performance and grade retention are closely related to school drop out. As a result of poor academic performance, school disengagement occurs over time for students, as evidenced by increased absences and negative interactions with teachers and peers (Bost & Riccomini, 2006; Kemp; Rumberger, 1995). Therefore, research such as that conducted by Neild et al. (2007) and Sparks et al. (2008) examining potential indicators for future school dropout are helpful to educators in making decisions about which students to target for intervention. Such efforts should include student services staff, who can “play a vital role [in dropout prevention] by providing intervention that will change student behaviors to affect student attendance, discipline, and academics” (Williams, 2008).

#### Educational Leadership in Social and Emotional Learning

Educational leadership is defined by Hallinger and Heck (2006) as “an influence process by which school administrators, focusing especially on principals, seek to work with and through people towards the identification and achievement of organizational goals” (p. 216). Educational leaders play a vital role in determining how student services programs and staff are utilized to help achieve the organizational goal of improving students’ academic achievement (Louis & Gordon, 2006). Given this, before student services programs and staff can be evaluated fairly on their efforts to improve achievement and prevent

students from dropping out of school by addressing their social, emotional, and academic barriers to school success, education leaders and administrators need to value the benefits of social-emotional learning. However, school administrators and other education leaders are compelled by the increased accountability for improved student performance to focus a great deal of their time and effort solely on direct academic barriers and outcomes (Adelman & Taylor, 2006; Louis & Gordon). “Recent years have witnessed growing pressure and much greater interest from professionals and the public in how well schools perform with respect to student achievement. The No Child Left Behind Act of 2002, with its requirements for accountability through state and district report cards and testing of children, is an example of such heightened emphasis. How well schools prepare students for these various high-stakes tests has become the gold standard” (Zins, Bloodworth, Weissberg, & Walberg, 2004, p. 5). Even with the push for accountability through high-stakes testing, addressing social and emotional learning and barriers in schools, such as supporting student services programming and implementation of social-emotional learning into classrooms, may be worth greater emphasis from school administrators looking to help their schools excel. This may be particularly important given the plateau effect that is being found in many schools across the country who have already utilized prevailing methods for increasing test score but have since seen their increases level off (The Center for Mental Health in Schools at UCLA, 2002). Additional motivation for school administrators to consider addressing social and emotional

learning comes from Beland (2007), who notes that “educators need not view academic learning and social and emotional learning as opposite ends of a tug-of-war. When both support each other, students are more apt to be engaged in learning and develop themselves personally” (Beland, p. 69).

What is social-emotional learning? Social-emotional learning, or SEL, “is the process by which people develop the skills to recognize and manage emotions, form positive relationships, solve problems, become motivated to accomplish a goal, make responsible decisions, and avoid risky behavior” (Beland, 2007, p. 68). There are five basic competencies that SEL tries to impart to students (The Collaborative for Academic, Social, and Emotional Learning, 2003, p. 5):

1. Self-awareness: identification and recognition of one’s own emotions, recognition of strengths in one’s self and others, a sense of self-efficacy, and self-confidence;
2. Self-management: impulse control, stress management, persistence, goal setting, and motivation;
3. Social awareness: empathy, respect for others, and the ability to see different perspective of the same issue;
4. Relationship skills: cooperation, willingness to seek and provide help, and communication;
5. Responsible decision making: evaluation and reflection and personal and ethical responsibility.



The social and emotional development of students is viewed by many to be an essential responsibility of schools (Bencivenga & Elias, 2003). However, “while most schools remain highly concerned about the social and emotional development of their students and the need for safe, supportive schools that educate socially and emotionally competent students, they often are hesitant to engage in any activities for which they cannot predict clear, discernable benefits to students’ academic progress as reflected in their test scores” (Zins et al., 2004, p. 5). Therefore, a closer examination of the research on social and emotional learning outcomes on the academic achievement of students is necessary to determine whether the support of school leaders is warranted.

The Collaborative for Academic, Social, and Emotional Learning, or CASEL, is a non-profit organization based at the University of Illinois at Chicago whose mission is “to establish social and emotional learning as an essential part of education” (CASEL, n.d.a). Some of the current priorities for CASEL include conducting research on the impact of SEL and informing educational leaders of the benefits of SEL (CASEL, n.d.a). As part of their effort to conduct research on SEL, CASEL analyzed over 207 studies on school-based programs in social-emotional learning (Viadero, 2001). Their finding showed that students participating in the SEL programs from these studies “were better behaved, more positive, and less anxious than their control-group peers” (Viadero, p. 1). Most importantly, though, the students showed improvements in grades and test scores (Viadero). An additional summary by CASEL of three large-scale reviews

of research on the impact of SEL on students in grades K – 8 found that SEL programs “improved students’ social-emotional skills, attitudes about self and others, connection to school, positive social behavior, and academic performance; they also reduced students’ conduct problems and emotional distress” (CASEL, 2008, p. 3)

Additional research regarding SEL has also yielded positive results. Studies have shown that “systematically building students’ key SEL skills results in increased academic success” (O’Brien, Weissberg, & Shriver, 2003, p. 26). For example, as cited by CASEL (n.d.b), “Wang, Haertel and Wallberg (1997) found that social and emotional factors were among the most influential factors on student learning” (p. 1). A study by Carter, Briggs-Gowan and Ornstein-Davis (2004) found that students’ emotional health has an impact on academic outcomes. Additionally, positive social-emotional skills have been linked to improved school readiness and school success (Fantuzzo, Bulotsky-Shearer, McDermott, McWayne, Frye, & Perlman, 2007; Wentzel & Caldwell, 1997). “Accumulating research makes the compelling case that social and emotional factors are integral to academic learning and positive educational outcomes for children” (CASEL, n.d.b).

Based upon this research, the benefits of social-emotional learning to students and schools are becoming better documented. However, in order for SEL to be successfully incorporated into a school, thoughtful leadership is essential. Implementation and carrying out SEL in schools “requires leadership

that is committed to creating a coherent vision and that will work to marshal the resources and the staff energy and skills needed to realize it” (O’Brien et al., 2003, p. 25).

This undertaking may be no easy task for school administrators, given the demands for increased student achievement as evidenced through testing may lead many school administrators and staff to focus solely on the curriculum (Adelman & Taylor, 2006). However, Viadero (2001) suggests that schools “take time out of the curriculum to teach students to manage their emotions and to practice empathy, caring, and cooperation – and their academic achievement could improve in the bargain”.

The skills that education leaders need to implement SEL are the same skills required to be successful with most school reform efforts (CASEL, 2006). More specifically, creating a culture in one’s school that embraces change and shares in the leadership is vital (CASEL, 2006; Fullan, 2001). Additionally, education leaders must demonstrate emotional intelligence, not only to model SEL but also to utilize those interpersonal skills necessary to lead change (CASEL, 2006; Cherniss, 1998). Emotional intelligence refers to “the abilities to recognize and regulate emotions in ourselves and in others” (Goleman, 2001).

Education leaders must use their emotional intelligence to help support school staff through the three dimensions involved in the implementation of any new initiative in public education (Fullan, 2001, p. 39):

1. The possible use of new or revised materials (instructional resources such as curriculum materials or technologies);
2. The possible use of new teaching approaches (i.e. new teaching strategies or activities);
3. The possible alteration of beliefs (e.g. pedagogical assumptions and theories underlying particular new policies or programs).

In order for SEL to be successfully implemented in a school, “all three aspects of change are necessary because together they represent the means of achieving a particular educational goal or set of goals” (Fullan, 2001, p. 39).

Additionally, resistance by staff to the implementation of SEL can be managed by an educational leader who does the following (CASEL, 2006):

1. Set concrete goals;
2. Show sensitivity;
3. Model process skills;
4. Develop strategies for dealing with emotions;
5. Manage conflict;
6. Communicate;
7. Monitor process dynamics.

These strategies should be utilized to mitigate resistance to SEL and “to help instigate the learning and commitment that is necessary for actual implementation and sustained impact” (Fullan, 2001, p. 100).

Ultimately, the implementation of any significant initiative in public schools such as SEL requires a capable school administrator working with professional educators who are concerned most for what is best for their students. “Creating school- and districtwide comprehensive, coordinated SEL programming, in which schools and families work in partnership to promote knowledgeable, responsible, healthy, and caring children requires resourceful, emotionally intelligent leaders who have a vision of what they want to accomplish for 21<sup>st</sup> century education” (O’Brien et al., 2003, pp. 33-34).

Social and emotional learning in and of itself cannot address all barrier to academic success. Effective social-emotional learning is coordinated with the efforts of student services (Norris, 2006; O’Brien et al., 2003; Zins et al., 2003). When adequately supported, together SEL and student services can impact academic outcomes for entire schools and districts.

### Summary

Student services consist of school counselors, school social workers, school nurses, and school psychologists. The origins of each of these four domains within student services can be traced back to the industrial revolution and the passage of compulsory school attendance laws. Today, these school staff members continue to provide support for students facing academic, social, physical and emotional barriers to school success. While research shared in this review of literature suggest that student services staff have an impact on academic outcomes for students including preventing school dropout, national

and state policies for student services staffing in schools are not aligned with the results of this research.

With the growing demand of public schools to increase student performance despite looming fiscal constraints, educational and governmental leaders need to be able to make informed decisions about schools' funding and staffing that maximizes academic outcomes. To do so, more research is needed on the direct impact of student services staffing ratios on student academic outcomes, including dropout prevention. This study provides insight into whether or not a significant relationship exists between student services staff-to-student ratios and student achievement, and between student services staff-to-student ratios and dropout rates. It is hoped that the results of this study will aid educational and governmental leaders in making decisions regarding the efficient use of available funds in maximizing student outcomes.

## CHAPTER 3: METHODOLOGY

As indicated in chapter 1, the objectives of this study were to determine if a significant relationship exists between student services staff-to-student ratios and student achievement, and to determine if a significant relationship exists between student services staff-to-student ratios and dropout rates. For this study, we used the term student services to refer collectively to the fields of school counseling, school social work, school nursing and school psychology. This chapter describes the population, the design of the study, the data collection procedures, and the analyses of the data.

### Statement of the Problem

This study investigated the relationship student services staff-to-student ratios have on student academic performance and dropout rates. Most of the studies cited in the review of related literature suggest that student services do have a positive effect on academic performance and dropout prevention. However, the impact of additional student services expenditures in the form of increased staffing has not been examined thoroughly. As noted in chapter 1, this information may be beneficial to leadership in education and government who make fiscal and budgetary decisions for schools based on limited resources and, in the case of student services, limited outcome data.

### Research Questions

The primary research questions of this study were:

1. Is there a relationship between student services staff-to-student ratios and student achievement?
2. Is there a relationship between student services staff-to-student ratios and dropout rates?

### Null Hypotheses

The following null hypotheses were investigated:

H<sub>0</sub>1: A statistically significant relationship does not exist between total student services staff-to-student ratios and district growth status.

H<sub>0</sub>2: A statistically significant relationship does not exist between school counselor-to-student ratios and district growth status.

H<sub>0</sub>3: A statistically significant relationship does not exist between school social worker-to-student ratios and district growth status.

H<sub>0</sub>4: A statistically significant relationship does not exist between school nurse-to-student ratios and district growth status.

H<sub>0</sub>5: A statistically significant relationship does not exist between school psychologist-to-student ratios and district growth status.

H<sub>0</sub>6: A statistically significant relationship does not exist between total student services staff-to-student ratios and district Adequate Yearly Progress (AYP) status.

H<sub>0</sub>7: A statistically significant relationship does not exist between school



counselor-to-student ratios and district Adequate Yearly Progress (AYP) status.

H<sub>0</sub>8: A statistically significant relationship does not exist between school social worker-to-student ratios and district Adequate Yearly Progress (AYP) status.

H<sub>0</sub>9: A statistically significant relationship does not exist between school nurse-to-student ratios and district Adequate Yearly Progress (AYP) status.

H<sub>0</sub>10: A statistically significant relationship does not exist between school psychologist-to-student ratios and district Adequate Yearly Progress (AYP) status.

H<sub>0</sub>11: A statistically significant relationship does not exist between total student services staff-to-student ratios and district dropout rate for grades 9-12.

H<sub>0</sub>12: A statistically significant relationship does not exist between school counselor-to-student ratios and district dropout rate for grades 9-12.

H<sub>0</sub>13: A statistically significant relationship does not exist between school social worker-to-student ratios and district dropout rate for grades 9-12.

H<sub>0</sub>14: A statistically significant relationship does not exist between school nurse-to-student ratios and district dropout rate for grades 9-12.

H<sub>0</sub>15: A statistically significant relationship does not exist between school psychologist-to-student ratios and district dropout rate for grades 9-12.

### Population

The population examined in this study included all 115 public K-12 school districts, or local education agencies (LEAs), in the state of North Carolina. Charter and private schools were not included in this study. The total K-12 public school enrollment in the state during the sixth month of the 2008-2009 school year was 1,408,848, with LEA enrollment ranging from 581 to 137,148 students (NCDPI, n.d.d). Of the total student enrollment in the state during the 2008-2009 school year, the racial breakdown was as follows: 54.2% Caucasian, 31.2% African-American, 10.7% Hispanic, 2.5% Asian, and 1.4% Native American (NCDPI, 2009b). Additionally, 186,753 students, or 13.1%, were served by the Exceptional Children's program (NCDPI, n.d.e). Finally, the most recent data available, which was for the 2007-2008 school year, indicated that 679,877 students in North Carolina public schools, or 48.4%, received free and/or reduced lunch due to economic status (NCDPI, n.d.f).

The collective performance and dropout data regarding these students, by LEA, was examined. Additionally, each LEA's student services staffing totals – both collectively and separately by program area (i.e. school counselors, school nurses, school psychologist, and school social workers) – were examined as part of this study.

## Design of the Study

### *Research Design*

For each of the 115 LEAs in the state of North Carolina, the following ratios were calculated based upon student services staffing data and student enrollment data from the sixth month of the 2008-2009 school year:

1. All student services staff (collectively) within the LEA divided by the total number of students in the LEA;
2. All school counselors within the LEA divided by the total number of students in the LEA;
3. All school social workers within the LEA divided by the total number of students in the LEA;
4. All school nurses within the LEA divided by the total number of students in the LEA;
5. All school psychologists within the LEA divided by the total number of students in the LEA.

For each type of ratio (student services staff-to-students, school counselors-to-students, school social workers-to-students, school nurses-to-students, and school psychologists-to-students), the 115 LEAs were ranked from highest ratio to lowest ratio and divided into two levels: those 58 LEAs with the higher staff to student ratios, and those 57 LEAs with the lower staff to student ratios. As there is an odd number of LEAs in the state of North Carolina, the LEA with the median

value in the ranking for each type of ratio was included with the group of LEAs with the higher staff to student ratios.

#### *Growth and Student Services Staff-to-Student Ratios*

In examining the relationship between student services staff-to-student ratios and district growth, a Fisher's exact test was performed. This analysis compared the level of ratio (high/low) with the growth outcome (met/not met) for each LEA. Additional Fisher's exact tests were performed to compare the level of ratio (high/low) with the growth outcome (met/not met) for LEAs for each of the following ratio types: school counselor-to-student ratios, school social worker-to-student ratios, school nurse-to-student ratios, and school psychologist-to-student ratios.

#### *AYP and Student Services Staff-to-Student Ratios*

In examining the relationship between student services staff-to-student ratios and AYP status, a Fisher's exact test was performed. This analysis compared the level of ratio (high/low) with the AYP status (met/not met) for each LEA. Additional Fisher's exact tests were performed to compare the level of ratio (high/low) with the AYP status (met/not met) for LEAs for each of the following ratio types: school counselor-to-student ratios, school social worker-to-student ratios, school nurse-to-student ratios, and school psychologist-to-student ratios.

#### *Dropout Rate and Student Services Staff-to-Student Ratios*

In examining the relationship between student services staff-to-student ratios and dropout rates, a Fisher's exact test was performed. This analysis

compared the level of ratio (high/low) with the level of the dropout rate (above/below state average) for each LEA. Additional Fisher's exact tests were performed to compare the level of ratio (high/low) with the level of the dropout rate (above/below the state average) for LEAs for each of the following ratio types: school counselor-to-student ratios, school social worker-to-student ratios, school nurse-to-student ratios, and school psychologist-to-student ratios.

In all, 15 Fisher's exact tests were performed (see Table 1). The results of these Fisher's exact tests were used to determine whether or not the null hypotheses were accepted or rejected. It should be noted that, due to there being several types of student outcomes examined and a large number of Fisher's exact tests performed, the results of this study should be tempered as exploratory in nature.

### *Limitations*

The limitations of the study were as follows:

1. Contracted services for students that fall under the umbrella of student services cannot be accounted for in this study.
2. Student services other than School Counseling, School Social Work, School Nursing, and School Psychology may impact student achievement and dropout prevention but are not included in this study.
3. In the school districts analyzed, decisions on spending for programs, staffing and services other than student services vary across districts

and may account for differences in student achievement and dropout rates.

4. Data providing growth by district for the 2008-2009 school year was not available from the NC Department of Public Instruction; however, growth by school within each district was available. Therefore, an average of the growth scores of the schools within each district was calculated and used as an approximation of the overall district growth level.

#### *Assumptions*

The assumptions of the study were as follows:

1. The quality of the services provided by student services staff across the school districts examined was constant.
2. The socioeconomic status of students was accounted for through the availability of additional state and federal funds for staffing and services in low-wealth districts.
3. The percentage of students identified as special needs was accounted for through the availability of additional federal funds through IDEA for staffing and services in districts with higher rates of identified students.
4. All student services staffing within analyzed school districts are accounted for fully and accurately by the Division of Financial and Business Services of the North Carolina Department of Public Instruction.

5. Student services staff-to-student ratios within each school district were constant throughout the 2007-2008 and 2008-2009 school years.
6. The quality of leadership in the school districts examined was constant.
7. The quality of teaching and instruction in the school districts examined was constant.
8. All instructional programs and services, excluding student services, in the school districts examined were constant.

#### Data Collection Procedures

Local, state and federally funded student services positions for the sixth month of the 2008-2009 school year, by position type and LEA, were obtained from the financial & business services division of the North Carolina Department of Public Instruction. These data were used in conjunction with the student enrollment of each LEA for the sixth month of the 2008-2009 school year to determine the student services staff-to-student ratios within each LEA. The following data were also obtained through the North Carolina Department of Public Instruction's Accountability Services Division:

- The growth status of each public school in the state of North Carolina for the 2008-2009 school year.
- The AYP status of each LEA for the 2008-2009 school year; and
- The dropout rate for grades 9-12 of each LEA for the 2007-2008 school year.

It should be noted that 2007-2008 dropout data for each LEA was examined in relation to 2008-2009 student services staffing and student enrollment data. This decision is due to the fact that, as outlined in chapter 1 when defining dropout rate, a student does not count as an official dropout, for data collection purposes, unless he/she is no longer enrolled by day 20 of the subsequent school year after quitting school. Therefore, official data collection by LEAs for state reporting, as well as verification and compilation of official data by the state, does not occur until much later into the following school year. In this instance, 2007-2008 dropout data is the most recent data available and takes into account the efforts of student services staff during the first 20 days of the 2008-2009 school year in convincing potential dropouts to return to school prior to counting as an official dropout for the 2007-2008 school year.

#### Analysis of Data

The non-parametric statistic Fisher's exact test was used to examine the frequency of distribution of LEAs based on two categorical variables: (1) high/low student services staff-to-student ratio; and (2) met/not met for growth, met/not met for AYP, or above/below state average for dropout rate. Therefore, this study was a 2x2 table design, comparing two variables each with two categories.

The Fisher's exact test was chosen as the statistic of analysis for this study as an alternative to the simpler-to-calculate and therefore more commonly used Pearson Chi-Square Test for Independence (Sheskin, 2004). An assumption of the Chi-Square Test for Independence is that the expected



frequencies in a 2x2 table be at least 10 (Pallant, 2007). However, depending on the AYP and growth results of the 115 LEAs examined in this study, there was the distinct possibility that our sample would be unequally distributed in the 2x2 frequency table, resulting in a cell size of less than 10 LEAs. Having a cell size of less than 10 would violate one of the assumptions for using Chi-Square; therefore, the Fisher's exact test is recommended in place of the Chi-Square Test for Independence (Pallant, 2007).

Fisher's exact test calculates the probability of getting a 2x2 table as strong as or stronger than the observed table (Sheskin, 2004). The formula for the Fisher's exact test is as follows (Sheskin, p. 506):

2x2 Frequency Table

a	b
c	d

$$P = \frac{(a + c)! (b + d)! (a + b)! (c + d)!}{n! a! b! c! d!}$$

where

- $P$  is the probability of obtaining the observed frequencies.
- a, b, c, d are the categorical frequencies observed.
- n is the sample size.

For each two-tailed Fisher's exact test conducted in this study, the level of significance for the null hypotheses was set at .05, or  $p < .05$ . All statistical analyses were performed using the SPSS 17.0 quantitative software package.

## Summary

The purpose of this study was to examine the relationship between student services staff-to-student ratios and student achievement, as well as the relationship between student services staff-to-student ratios and dropout rates. Chapter 3 detailed the null hypotheses and research questions of this study. Additionally, the research design, data collection procedures and the method for data analysis were covered. In chapter 4, the results of the Fisher's exact tests performed for this study will be presented.

## CHAPTER 4: DATA ANALYSIS

The purpose of this study was two-fold: to determine if a significant relationship exists between student services staff-to-student ratios and student achievement, and to determine if a significant relationship exists between student services staff-to-student ratios and dropout rates. To accomplish this goal, the Fisher's exact test was used to ascertain the frequency of distribution of local education agencies, or LEAs, based on two categorical variables: (1) high/low student services staff-to-student ratio; and (2) met/not met for growth, met/not met for AYP, or above/below state average for dropout rate. In all, 15 two-tailed Fisher's exact tests were conducted at the .05 significance level, or  $p < .05$ .

The research findings are presented in two sections. The first section examines the findings for student services staff-to-student ratios and student achievement in the form of growth and adequate yearly progress, or AYP. The second section examines the research findings for student services staff-to-student ratios and dropout rate.

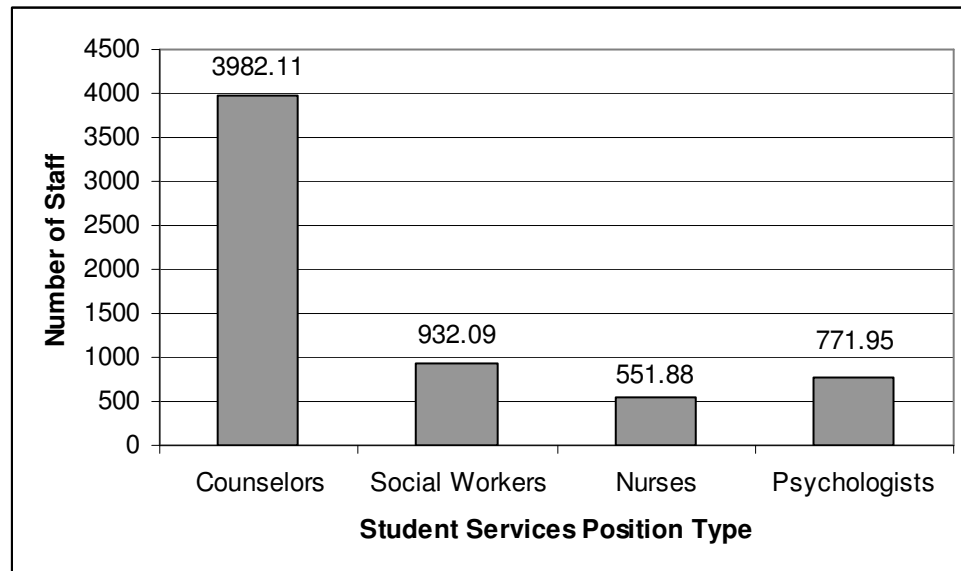
### Demographics

All 115 K-12 public school districts, also known as local education agencies or LEAs, in the state of North Carolina were included in this study. The total K-12 public school enrollment in the state during the sixth month of the 2008-2009 school year was 1,408,848, with LEA enrollment ranging from 581 to 137,148 students (NCDPI, n.d.d). Of the total student enrollment in the state during the 2008-2009 school year, the racial breakdown was as follows: 54.2%

Caucasian, 31.2% African-American, 10.7% Hispanic, 2.5% Asian, and 1.4% Native American (NCDPI, 2009b). Additionally, 186,753 students, or 13.1%, were served by the Exceptional Children's program (NCDPI, n.d.e). Finally, the most recent data available, which was for the 2007-2008 school year, indicates that 679,877 students in North Carolina public schools, or 48.4%, received free and/or reduced lunch due to economic status (NCDPI, n.d.f).

With regard to student achievement outcomes, 102 of the 115 LEAs in North Carolina met growth during the 2008-2009 school year, while only 12 LEAs met AYP. Additionally, 22,434 students in grades 9-12, or 4.97%, dropped out of North Carolina public schools during the 2007-2008 school year (NCDPI, 2008d). Of these dropouts, 59.66% were male while 40.34% were female (NCDPI, 2008d). The racial breakdown of dropouts in North Carolina public schools during the 2007-2008 school year is as follows: 6.99% of Native Americans, 6.92% of Hispanics, 5.95% of African-Americans, 5.06 % of Multiracial, 4.25% of Caucasians, and 2.15% of Asians (NCDPI, 2008d).

Each LEA's student services staffing totals – both collectively and separately by program area (i.e. school counselors, school nurses, school psychologist, and school social workers) – were examined as part of this study. The total number of student services staff members in the 115 LEAs in North Carolina is as follows (see Figure 2):



*Figure 2.* Student services staffing totals in North Carolina Public Schools by type.

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School Counselors	3,982.11
School Social Workers	932.09
School Nurses	551.88
School Psychologists	<u>771.95</u>
Student Services (total)	6,238.03

### Research Questions

The primary research questions of this study were:

1. Is there a relationship between student services staff-to-student ratios and student achievement?
2. Is there a relationship between student services staff-to-student ratios and dropout rates?

### Null Hypotheses

The following null hypotheses were investigated:

H<sub>0</sub>1: A statistically significant relationship does not exist between total student services staff-to-student ratios and district growth status.

H<sub>0</sub>2: A statistically significant relationship does not exist between school counselor-to-student ratios and district growth status.

H<sub>0</sub>3: A statistically significant relationship does not exist between school social worker-to-student ratios and district growth status.

H<sub>0</sub>4: A statistically significant relationship does not exist between school nurse-to-student ratios and district growth status.

- H<sub>0</sub>5: A statistically significant relationship does not exist between school psychologist-to-student ratios and district growth status.
- H<sub>0</sub>6: A statistically significant relationship does not exist between total student services staff-to-student ratios and district Adequate Yearly Progress (AYP) status.
- H<sub>0</sub>7: A statistically significant relationship does not exist between school counselor-to-student ratios and district Adequate Yearly Progress (AYP) status.
- H<sub>0</sub>8: A statistically significant relationship does not exist between school social worker-to-student ratios and district Adequate Yearly Progress (AYP) status.
- H<sub>0</sub>9: A statistically significant relationship does not exist between school nurse-to-student ratios and district Adequate Yearly Progress (AYP) status.
- H<sub>0</sub>10: A statistically significant relationship does not exist between school psychologist-to-student ratios and district Adequate Yearly Progress (AYP) status.
- H<sub>0</sub>11: A statistically significant relationship does not exist between total student services staff-to-student ratios and district dropout rate for grades 9-12.
- H<sub>0</sub>12: A statistically significant relationship does not exist between school counselor-to-student ratios and district dropout rate for grades

9-12.

H<sub>0</sub>13: A statistically significant relationship does not exist between school social worker-to-student ratios and district dropout rate for grades 9-12.

H<sub>0</sub>14: A statistically significant relationship does not exist between school nurse-to-student ratios and district dropout rate for grades 9-12.

H<sub>0</sub>15: A statistically significant relationship does not exist between school psychologist-to-student ratios and district dropout rate for grades 9-12.

## Findings

### *Student Achievement*

The first research question examined was whether there was a relationship between student services staff-to-student ratios and student achievement. Student achievement was analyzed using two different measures: growth and adequate yearly progress, or AYP.

In examining the relationship between student services staff-to-student ratios and district growth, five Fisher's exact tests were performed. The first analysis compared the level of ratio (high/low) with the growth outcome (met/not met) for each LEA. The four additional analyses performed compared the level of ratio (high/low) with the growth outcome (met/not met) for LEAs for each of the following ratio types: school counselor-to-student ratios, school social worker-to-



student ratios, school nurse-to-student ratios, and school psychologist-to-student ratios.

Presentation of the results of each Fisher's exact test conducted to its respective null hypothesis follows below (see Table 2):

H<sub>01</sub>: A statistically significant relationship does not exist between total student services staff-to-student ratios and district growth status (see Table 3). A Fisher's exact tests indicated no significant association between total student services staff-to-student ratios and district growth status, ( $P = 0.777$ , two-tailed Fisher's exact test). Therefore, H<sub>01</sub> was accepted.

H<sub>02</sub>: A statistically significant relationship does not exist between school counselor-to-student ratios and district growth status (see Table 4). A Fisher's exact test indicated no significant association between school counselor-to-student ratios and district growth status, ( $P = 0.558$ , two-tailed Fisher's exact test). Therefore, H<sub>01</sub> was accepted.

H<sub>03</sub>: A statistically significant relationship does not exist between school social worker-to-student ratios and district growth status (see Table 5). A Fisher's exact test indicated no significant association between school social worker-to-student ratios and district growth status, ( $P = 0.777$ , two-tailed Fisher's exact test). Therefore, H<sub>01</sub> was accepted.

H<sub>04</sub>: A statistically significant relationship does not exist between school nurse-to-student ratios and district growth status (see Table 6). A Fisher's exact test indicated no significant association between school nurse-to-student ratios

Table 2

*Results of Fisher's Exact Tests for Student Services Staff-to-Student Ratios and District Growth Status*

Student Services Ratio Type	n	P
Total Student Services Staff-to-Student Ratio	115	0.777
School Counselor-to-Student Ratio	115	0.558
School Social Worker-to-Student Ratio	115	0.777
School Nurse-to-Student Ratio	115	0.558
School Psychologist-to-Student Ratio	115	0.043

Table 3

*Frequency Distribution of Fisher's Exact Test for Student Services Staff-to-Student Ratios and District Growth Status*

---

Student Services Staff-to-Student Ratio	District Growth Status		
	Met	Not Met	Total
High Ratio	27	31	58
Low Ratio	26	31	57
Total	53	62	115

Table 4

*Frequency Distribution of Fisher's Exact Test for School Counselor-to-Student Ratios and District Growth Status*

---

School Counselor-to-Student Ratio	District Growth Status		
	Met	Not Met	Total
High Ratio	50	8	58
Low Ratio	52	5	57
Total	102	13	115

Table 5

*Frequency Distribution of Fisher's Exact Test for School Social Worker-to-Student Ratios and District Growth Status*

---

School Social Worker-to-Student Ratio	District Growth Status		
	Met	Not Met	Total
High Ratio	52	6	58
Low Ratio	50	7	57
Total	102	13	115

Table 6

*Frequency Distribution of Fisher's Exact Test for School Nurse-to-Student Ratios  
and District Growth Status*

School Nurse-to-Student Ratio	District Growth Status		
	Met	Not Met	Total
High Ratio	50	8	58
Low Ratio	52	5	57
Total	102	13	115

and district growth status, ( $P = 0.558$ , two-tailed Fisher's exact test). Therefore,  $H_01$  was accepted.

$H_05$ : A statistically significant relationship does not exist between school psychologist-to-student ratios and district growth status (see Table 7). A Fisher's exact test indicated a significant association between school psychologist-to-student ratios and district growth status, ( $P = 0.043$ , two-tailed Fisher's exact test). Therefore,  $H_01$  was rejected.

In examining the relationship between student services staff-to-student ratios and AYP status, five Fisher's exact tests were performed. The first analysis compared the level of ratio (high/low) with the AYP status (met/not met) for each LEA. The four additional analyses performed compared the level of ratio (high/low) with the AYP status (met/not met) for LEAs for each of the following ratio types: school counselor-to-student ratios, school social worker-to-student ratios, school nurse-to-student ratios, and school psychologist-to-student ratios.

Presentation of the results of each Fisher's exact test conducted to its respective null hypothesis follows below (see Table 8):

$H_06$ : A statistically significant relationship does not exist between total student services staff-to-student ratios and district Adequate Yearly Progress (AYP) status (see Table 9). A Fisher's exact test indicated no significant association between total student services staff-to-student ratios and district Adequate Yearly Progress (AYP) status, ( $P = 0.762$ , two-tailed Fisher's exact test). Therefore,  $H_01$  was accepted.

Table 7

*Frequency Distribution of Fisher's Exact Test for School Psychologist-to-Student Ratios and District Growth Status*

---

School Psychologist-to-Student Ratio	District Growth Status		
	Met	Not Met	Total
High Ratio	55	3	58
Low Ratio	47	10	57
Total	102	13	115



Table 8

*Results of Fisher's Exact Tests for Student Services Staff-to-Student Ratios and District AYP Status*

Student Services Ratio Type	n	P
Total Student Services Staff-to-Student Ratio	115	0.762
School Counselor-to-Student Ratio	115	1.000
School Social Worker-to-Student Ratio	115	0.238
School Nurse-to-Student Ratio	115	0.361
School Psychologist-to-Student Ratio	115	0.762

Table 9

*Frequency Distribution of Fisher's Exact Test for Student Services Staff-to-Student Ratios and District AYP Status*

---

Student Services Staff-to-Student Ratio	District AYP Status		
	Met	Not Met	Total
High Ratio	7	51	58
Low Ratio	5	52	57
Total	12	103	115

H<sub>0</sub>7: A statistically significant relationship does not exist between school counselor-to-student ratios and district Adequate Yearly Progress (AYP) status (see Table 10). A Fisher's exact test indicated no significant association between school counselor-to-student ratios and district Adequate Yearly Progress (AYP) status, ( $P = 1.000$ , two-tailed Fisher's exact test). Therefore, H<sub>0</sub>1 was accepted.

H<sub>0</sub>8: A statistically significant relationship does not exist between school social worker-to-student ratios and district Adequate Yearly Progress (AYP) status (see Table 11). A Fisher's exact test indicated no significant association between school social worker-to-student ratios and district Adequate Yearly Progress (AYP) status, ( $P = 0.238$ , two-tailed Fisher's exact test). Therefore, H<sub>0</sub>1 was accepted.

H<sub>0</sub>9: A statistically significant relationship does not exist between school nurse-to-student ratios and district Adequate Yearly Progress (AYP) status (see Table 12). A Fisher's exact test indicated no significant association between school nurse-to-student ratios and district Adequate Yearly Progress (AYP) status, ( $P = 0.361$ , two-tailed Fisher's exact test). Therefore, H<sub>0</sub>1 was accepted.

H<sub>0</sub>10: A statistically significant relationship does not exist between school psychologist-to-student ratios and district Adequate Yearly Progress (AYP) status (see Table 13). A Fisher's exact test indicated no significant association between school psychologist-to-student ratios and district Adequate Yearly Progress (AYP) status, ( $P = 0.762$ , two-tailed Fisher's exact test). Therefore, H<sub>0</sub>1 was accepted.

Table 10

*Frequency Distribution of Fisher's Exact Test for School Counselor-to-Student Ratios and District AYP Status*

School Counselor-to-Student Ratio	District AYP Status		
	Met	Not Met	Total
High Ratio	6	52	58
Low Ratio	6	51	57
Total	12	103	115

Table 11

*Frequency Distribution of Fisher's Exact Test for School Social Worker-to-Student Ratios and District AYP Status*

---

School Social Worker-to-Student Ratio	District AYP Status		
	Met	Not Met	Total
High Ratio	4	54	58
Low Ratio	8	49	57
Total	12	103	115

Table 12

*Frequency Distribution of Fisher's Exact Test for School Nurse-to-Student Ratios and District AYP Status*

School Nurse-to-Student Ratio	District AYP Status		
	Met	Not Met	Total
High Ratio	8	50	58
Low Ratio	4	53	57
Total	12	103	115

Table 13

*Frequency Distribution of Fisher's Exact Test for School Psychologist-to-Student Ratios and District AYP Status*

---

School Psychologist-to-Student Ratio	District AYP Status		
	Met	Not Met	Total
High Ratio	7	51	58
Low Ratio	5	52	57
Total	12	103	115

### *Dropout Rate*

The second research question examined was whether there was a relationship between student services staff-to-student ratios and dropout rates. More specifically, districts were compared based upon whether their respective dropout rate was above or below the state average. In examining the relationship between student services staff-to-student ratios and dropout rates, five Fisher's exact tests were performed. The first analysis compared the level of ratio (high/low) with the level of the dropout rate (above/below state average) for each LEA. The four additional analyses performed compared the level of ratio (high/low) with the level of the dropout rate (above/below the state average) for LEAs for each of the following ratio types: school counselor-to-student ratios, school social worker-to-student ratios, school nurse-to-student ratios, and school psychologist-to-student ratios.

Presentation of the results of each Fisher's exact test conducted to its respective null hypothesis follows below (see Table 14):

H<sub>011</sub>: A statistically significant relationship does not exist between total student services staff-to-student ratios and district dropout rate for grades 9-12 (see Table 15). A Fisher's exact test indicated no significant association between total student services staff-to-student ratios and district dropout rate for grades 9-12, ( $P = 1.000$ , two-tailed Fisher's exact test). Therefore, H<sub>01</sub> was accepted.



Table 14

*Results of Fisher's Exact Tests for Student Services Staff-to-Student Ratios and District Dropout Rate for Grades 9-12*

<u>Student Services Ratio Type</u>	<u>n</u>	<u>P</u>
Total Student Services Staff-to-Student Ratio	115	1.000
School Counselor-to-Student Ratio	115	1.000
School Social Worker-to-Student Ratio	115	0.352
School Nurse-to-Student Ratio	115	0.456
School Psychologist-to-Student Ratio	115	0.136

Table 15

*Frequency Distribution of Fisher's Exact Test for Student Services Staff-to-Student Ratios and District Dropout Rate for Grades 9-12*

---

Student Services Staff-to-Student Ratio	District Dropout Rate Relative to State Average		
	Below	Above	Total
High Ratio	27	31	58
Low Ratio	26	31	57
Total	53	62	115

H<sub>0</sub>12: A statistically significant relationship does not exist between school counselor-to-student ratios and district dropout rate for grades 9-12 (see Table 16). A Fisher's exact test indicated no significant association between school counselor-to-student ratios and district dropout rate for grades 9-12, ( $P = 1.000$ , two-tailed Fisher's exact test). Therefore, H<sub>0</sub>1 was accepted.

H<sub>0</sub>13: A statistically significant relationship does not exist between school social worker-to-student ratios and district dropout rate for grades 9-12 (see Table 17). A Fisher's exact test indicated no significant association between school social worker-to-student ratios and district dropout rate for grades 9-12, ( $P = 0.352$ , two-tailed Fisher's exact test). Therefore, H<sub>0</sub>1 was accepted.

H<sub>0</sub>14: A statistically significant relationship does not exist between school nurse-to-student ratios and district dropout rate for grades 9-12 (see Table 18). A Fisher's exact test indicated no significant association between school nurse-to-student ratios and district dropout rate for grades 9-12, ( $P = 0.456$ , two-tailed Fisher's exact test). Therefore, H<sub>0</sub>1 was accepted.

H<sub>0</sub>15: A statistically significant relationship does not exist between school psychologist-to-student ratios and district dropout rate for grades 9-12 (see Table 19). A Fisher's exact test indicated no significant association between school psychologist-to-student ratios and district dropout rate for grades 9-12, ( $P = 0.136$ , two-tailed Fisher's exact test). Therefore, H<sub>0</sub>1 was accepted.

Table 16

*Frequency Distribution of Fisher's Exact Test for School Counselor-to-Student Ratios and District Dropout Rate for Grades 9-12*

---

School Counselor-to-Student Ratio	District Dropout Rate Relative to State Average		
	Below	Above	Total
High Ratio	27	31	58
Low Ratio	26	31	57
Total	53	62	115

Table 17

*Frequency Distribution of Fisher's Exact Test for School Social Worker-to-Student Ratios and District Dropout Rate for Grades 9-12*

---

School Social Worker-to-Student Ratio	District Dropout Rate Relative to State Average		
	Below	Above	Total
High Ratio	24	34	58
Low Ratio	29	28	57
Total	53	62	115

Table 18

*Frequency Distribution of Fisher's Exact Test for School Nurse-to-Student Ratios  
and District Dropout Rate for Grades 9-12*

---

School Nurse-to-Student Ratio	District Dropout Rate Relative to State Average		
	Below	Above	Total
High Ratio	29	29	58
Low Ratio	24	33	57
Total	53	62	115

Table 19

*Frequency Distribution of Fisher's Exact Test for School Psychologist-to-Student Ratios and District Dropout Rate for Grades 9-12*

---

School Psychologist-to-Student Ratio	District Dropout Rate Relative to State Average		
	Below	Above	Total
High Ratio	31	27	58
Low Ratio	22	35	57
Total	53	62	115

### Summary

This chapter included a detailed accounting of the results of the data analyses conducted for this study. Fourteen of the fifteen null hypotheses of this study were accepted. The lone null hypothesis to be rejected stated that a statistically significant relationship does not exist between school psychologist-to-student ratios and district growth status. In fact, a significant relationship at the  $p < .05$  level was found to exist between school psychologist-to-student ratios and district growth status. Discussion and implications related to the findings of this study, as well as recommendations for further research, are included in chapter 5.



## CHAPTER 5: DISCUSSION AND RECOMMENDATIONS

The purpose of this study was two-fold: to determine if a significant relationship exists between student services staff-to-student ratios and student achievement, and to determine if a significant relationship exists between student services staff-to-student ratios and dropout rates. This chapter summarizes the study, provides a discussion of the findings, and outlines the implications and recommendations for further research resulting from the study.

### Summary

As discussed in chapter 1, student services in public schools encompass, at a minimum, the professional fields of school counseling, school social work, school nursing, and school psychology (Adelman & Taylor, 2006; Brown & Trusty, 2005; California Department of Education, 2003; Carrell & Carrell, 2006; NASP, 2004; Schmidt & Ciechalski, 2001). The purpose of student services staff is to help meet the needs of students through their efforts in six clusters of activity: improving social skills, providing mental health services, removing barriers to achievement, serving as an advocate/change agent, providing organizational support within schools, and positively addressing student behavior and disciplinary problems (Louis & Gordon, 2006). The impact that student services personnel have on student outcomes, however, comes into question during difficult budgetary seasons when fiscal analysts in financially-strapped school districts look at the cost-benefit ratio of programming in relation to student achievement (Jacques & Brorsen, 2002). Often, the decision made during these

deliberations is to implement cuts to student services programs and staffing (Adelman & Taylor, 2006; Goodman & Young, 2006). This is due in part to legislation such as No Child Left Behind that has led school district to focus on accountability and student achievement. Unfortunately, not much data exist to help education leaders prioritize student services funding, particularly in relation to the impact these services have on improving student achievement (Carrell & Carrell; Goodman & Young; Guttu et al., 2004; Jacques & Brorsen). And while many education leaders believe student services ultimately help students in schools, “they cannot submit budget requests based on blind faith” (Ottwell & Mullis, 1997, p. 347).

Of the limited but growing body of research that has been conducted examining the impact of student services on student outcomes, such as student achievement and dropout prevention, the results have mostly been positive (Allen, 2003; Bagley & Pritchard, 1998; Baker & Jansen, 2000; Brigman & Campbell, 2003; California Department of Education, 2003; Christo, 2005; Cooper, 2005; Costante, 2006; Diehl & Frey, 2008; Early & Vonk, 2001; Edmondson & White, 1998; Engelke et al., 2008; Epstein & Sheldon, 2002; Fiorello et al., 2006; Franklin et al., 2009; Goodman & Young, 2006; Gregor, 2005; Guttu et al., 2004; Hawken & Hess, 2006; Henderson et al., 2002; Henley & Furlong, 2006; Herring, 1998; Lapan et al., 2001; Lapan et al., 1997; Maughan, 2003; Newsome, 2004, 2005; Newsome et al., 2008; Openshaw, 2008; Ottwell & Mullis, 1997; Sheldon, 2007; Sink et al., 2008; Sink & Stroh, 2003; Telljohann et

al., 2004; Thiede, 2005; Tobias & Myrick, 1999; Walsh & Murphy, 2003; Webb et al., 2005; Whiston & Sexton, 1998; Whitfield, 1999; Wyman, 2005). While staffing ratios were not the specific focus of these studies, one might logically deduce that a change in student services staffing would affect the means and extent to which the services and interventions explored in these studies are provided. Due to the implementation of No Child Left Behind and its emphasis on accountability and student achievement, the base of research on the impact of student services specifically on student achievement outcomes has begun to grow steadily (Dimmitt et al., 2007). However, the impact of additional student services expenditures in the form of increased staffing on student achievement and dropout prevention has not been examined thoroughly. One study conducted by Jacques and Brorsen (2002) indicates that greater expenditures on student services had a negative effect on student performance. More research is needed to inform educational and governmental leadership as to whether student services staffing expenditures in particular would be a worthwhile investment toward achieving greater student achievement outcomes, including reducing school dropout.

This study investigated the relationship student services staff-to-student ratios have on student academic performance and dropout rates. The results of this study may be beneficial to leadership in education and government who make budgetary decisions for schools based on limited resources and, in the case of student services staffing, limited outcome data (Carrell & Carrell, 2006;

Goodman & Young, 2006; Guttu et al., 2004; Jacques & Brorsen, 2002; Whiston, 2002). The primary research questions of this study were:

1. Is there a significant relationship between student services staff-to-student ratios and student achievement?
2. Is there a significant relationship between student services staff-to-student ratios and dropout rates?

In chapter 2 of this study, a thorough review of literature relating to student services included the following topics: the roles of the various types of student services staff in public schools; the history of the various types of student services in public schools; policies for student services staffing across the United States and within North Carolina; research on the effect of student services on student academic outcomes; the ABCs accountability model in North Carolina public schools; the dropout crisis in public education; and educational leadership in social and emotional learning.

In chapter 3, a description of the methodology for this study was outlined. More specifically, this study utilized a quantitative, correlational research design. Data were collected from the North Carolina Department of Public Instruction on all 115 school districts or LEAs within the state. The data included:

1. The total number of positions employed and specifically coded as school counselor, school nurse, school social worker, or school psychologists within each school district in the state of North Carolina for the 2008-2009 school year.

2. The total number of students enrolled within each school district in the state of North Carolina for the 2008-2009 school year.
3. The growth status of each public school in the state of North Carolina for the 2008-2009 school year.
4. The Adequate Yearly Progress (AYP) status of each school district in the state for the 2008-2009 school year.
5. The dropout rates for grades 9-12 for each school district in the state of North Carolina for the 2007-2008 school year.

A series of Fisher's exact tests were performed to determine if a relationship exists between student services staff-to-student ratios and student outcomes in academic achievement and dropout rate. Staffing for each of the four identified positions within student services – school counselors, school nurses, school social workers, and school psychologists – was analyzed separately as well as collectively to determine if there is a relationship with student outcomes. Student outcomes analyzed included:

1. District growth status.
2. District status for Adequate Yearly Progress.
3. Dropout rates for grades 9-12.

In all, 15 Fisher's exact tests were performed, each examining one of our null hypotheses (see Table 1). The following were the null hypotheses for this study:

$H_01$ : A statistically significant relationship does not exist between total student services staff-to-student ratios and district growth status.

H<sub>0</sub>2: A statistically significant relationship does not exist between school counselor-to-student ratios and district growth status.

H<sub>0</sub>3: A statistically significant relationship does not exist between school social worker-to-student ratios and district growth status.

H<sub>0</sub>4: A statistically significant relationship does not exist between school nurse-to-student ratios and district growth status.

H<sub>0</sub>5: A statistically significant relationship does not exist between school psychologist-to-student ratios and district growth status.

H<sub>0</sub>6: A statistically significant relationship does not exist between total student services staff-to-student ratios and district Adequate Yearly Progress (AYP) status.

H<sub>0</sub>7: A statistically significant relationship does not exist between school counselor-to-student ratios and district Adequate Yearly Progress (AYP) status.

H<sub>0</sub>8: A statistically significant relationship does not exist between school social worker-to-student ratios and district Adequate Yearly Progress (AYP) status.

H<sub>0</sub>9: A statistically significant relationship does not exist between school nurse-to-student ratios and district Adequate Yearly Progress (AYP) status.

H<sub>0</sub>10: A statistically significant relationship does not exist between school psychologist-to-student ratios and district Adequate Yearly

Progress (AYP) status.

H<sub>0</sub>11: A statistically significant relationship does not exist between total student services staff-to-student ratios and district dropout rate for grades 9-12.

H<sub>0</sub>12: A statistically significant relationship does not exist between school counselor-to-student ratios and district dropout rate for grades 9-12.

H<sub>0</sub>13: A statistically significant relationship does not exist between school social worker-to-student ratios and district dropout rate for grades 9-12.

H<sub>0</sub>14: A statistically significant relationship does not exist between school nurse-to-student ratios and district dropout rate for grades 9-12.

H<sub>0</sub>15: A statistically significant relationship does not exist between school psychologist-to-student ratios and district dropout rate for grades 9-12.

Limitations of the study that should be taken into account were as follows:

1. Contracted services for students that fall under the umbrella of student services could not be accounted for in this study.
2. Student services other than School Counseling, School Social Work, School Nursing, and School Psychology may impact student achievement and dropout prevention but are not included in this study.

3. In the school districts analyzed, decisions on spending for programs, staffing and services other than student services vary across districts and may account for differences in student achievement and dropout rates.
4. Data providing growth by district for the 2008-2009 school year was not available from the NC Department of Public Instruction; however, growth by school within each district was available. Therefore, an average of the growth scores of the schools within each district was calculated and used as an approximation of the overall district growth level.

Additionally, the following assumptions were in place for the purposes of this study:

1. The quality of the services provided by student services staff across the school districts examined was constant.
2. The socioeconomic status of students was accounted for through the availability of additional state and federal funds for staffing and services in low-wealth districts.
3. The percentage of students identified as special needs was accounted for through the availability of additional federal funds through IDEA for staffing and services in districts with higher rates of identified students.
4. All student services staffing within analyzed school districts are accounted for fully and accurately by the Division of Financial and



Business Services of the North Carolina Department of Public Instruction.

5. Student services staff-to-student ratios within each school district were constant throughout the 2007-2008 and 2008-2009 school years.
6. The quality of leadership in the school districts examined was constant.
7. The quality of teaching and instruction in the school districts examined was constant.
8. All instructional programs and services, excluding student services, in the school districts examined were constant.

Chapter 4 covered the results of the study in relation to the research questions and null hypotheses. These findings are discussed in more detail in the next section of this chapter.

### Findings

The following subsections will explore the findings for each of the research questions of this study.

#### The Effect of Student Services Staff-to-Student Ratios on Student Achievement

The first research question in this study asked if there was a significant relationship between student services staff-to-student ratios and student achievement. Two methods of measuring student achievement were examined for this purpose: Growth and Adequate Yearly Progress (AYP). We will first discuss the findings of the analyses of growth and student services staffing ratios.

*Growth and Total Student Services Staff-to-Student Ratios*

In examining the relationship between total student services staff-to-student ratios and district growth status, the results of this study found that no significant association exists between these two factors. Therefore, the provision of additional student services staff by an LEA does not have an effect on the district's growth status.

*Growth and School Counselor-to-Student Ratios*

In examining the relationship between school counselor-to-student ratios and district growth status, the results of this study found that no significant association exists between these two factors. Therefore, the provision of additional school counselors by an LEA does not have an effect on the district's growth status.

*Growth and School Social Worker-to-Student Ratios*

In examining the relationship between school social worker-to-student ratios and district growth status, the results of this study found that no significant association exists between these two factors. Therefore, the provision of additional school social workers by an LEA does not have an effect on the district's growth status.

*Growth and School Nurse-to-Student Ratios*

In examining the relationship between school nurse-to-student ratios and district growth status, the results of this study found that no significant association exists between these two factors. Therefore, the provision of

additional school nurses by an LEA does not have an effect on the district's growth status.

### *Growth and School Psychologist-to-Student Ratios*

In examining the relationship between school psychologist-to-student ratios and district growth status, the results of this study found that a significant association exists between these two factors. Therefore, the provision of additional school psychologists by an LEA has a positive effect on the district's growth status. This finding is supported by the research of Goodman and Young (2006), who found that "the number of psychologists employed by a public school district demonstrate a significant and decisive impact on achievement" (p. 3). As noted in chapter 2, part of the responsibilities of a school psychologist is to administer academic and/or psychological assessments to students for identification of learning or behavior problems (Dupper, 2003). They then interpret the results of these assessments to help determine whether a student is eligible for special education services (Dupper). As part of this process, school psychologists help develop and support prevention and intervention measures for students with learning or behavioral problems (NASP, 2003). Given the results of this study, one can draw the conclusion that the efforts of school psychologists in this regard help ensure that students are properly placed into regular or special education and receive the necessary supports to be successful in school. These supports may include modifications in the classroom and on achievement tests. Additionally, students who receive special education may be taught more

developmentally-appropriate lessons and objectives that differ from students who do not receive special education but are on the standard course of study.

Therefore, these students may be administered a different form of achievement testing than the North Carolina End-of-Grade or End-of-Course Tests to measure their academic change or growth.

School leaders should consider the results of this analysis when making decisions about the needed steps to take to help their students and schools grow academically. Based upon the results, investing in additional school psychologist may lead to improved learning, increased achievement testing results, and ultimately gains in district growth. This conclusion is supported by the research noted in chapter 2 of Christo (2005), Gregor (2005), Goodman and Young (2006), Hawken and Hess (2006), and Henley and Furlong (2006).

#### *AYP and Total Student Services Staff-to-Student Ratios*

In examining the relationship between total student services staff-to-student ratios and district AYP status, the results of this study found that no significant association exists between these two factors. Therefore, the provision of additional student services staff by an LEA does not have an effect on the district's AYP status.

#### *AYP and School Counselor-to-Student Ratios*

In examining the relationship between school counselor-to-student ratios and district AYP status, the results of this study found that no significant association exists between these two factors. Therefore, the provision of

additional school counselors by an LEA does not have an effect on the district's AYP status.

*AYP and School Social Worker-to-Student Ratios*

In examining the relationship between school social worker-to-student ratios and district AYP status, the results of this study found that no significant association exists between these two factors. Therefore, the provision of additional school social workers by an LEA does not have an effect on the district's AYP status.

*AYP and School Nurse-to-Student Ratios*

In examining the relationship between school nurse-to-student ratios and district AYP status, the results of this study found that no significant association exists between these two factors. Therefore, the provision of additional school nurses by an LEA does not have an effect on the district's AYP status.

*AYP and School Psychologist-to-Student Ratios*

In examining the relationship between school psychologist-to-student ratios and district AYP status, the results of this study found that no significant association exists between these two factors. Therefore, the provision of additional school psychologists by an LEA does not have an effect on the district's AYP status.

### The Effect of Student Services Staff-to-Student Ratios on Dropout Rates

The second research question asked if there was a significant relationship between student services staff-to-student ratios and dropout rates. Discussion of the findings of the analyses follows.

#### *Dropout Rate and Total Student Services Staff-to-Student Ratios*

In examining the relationship between total student services staff-to-student ratios and dropout rates, the results of this study found that no significant association exists between these two factors. Therefore, the provision of additional student services staff by an LEA does not have an effect on the district's dropout rate.

#### *Dropout Rate and School Counselor-to-Student Ratios*

In examining the relationship between school counselor-to-student ratios and dropout rates, the results of this study found that no significant association exists between these two factors. Therefore, the provision of additional school counselors by an LEA does not have an effect on the district's dropout rate.

#### *Dropout Rate and School Social Worker-to-Student Ratios*

In examining the relationship between school social worker-to-student ratios and dropout rates, the results of this study found that no significant association exists between these two factors. Therefore, the provision of additional school social workers by an LEA does not have an effect on the district's dropout rate.

### *Dropout Rate and School Nurse-to-Student Ratios*

In examining the relationship between school nurse-to-student ratios and dropout rates, the results of this study found that no significant association exists between these two factors. Therefore, the provision of additional school nurses by an LEA does not have an effect on the district's dropout rate.

### *Dropout Rate and School Psychologist-to-Student Ratios*

In examining the relationship between school psychologist-to-student ratios and dropout rates, the results of this study found that no significant association exists between these two factors. Therefore, the provision of additional school psychologists by an LEA does not have an effect on the district's dropout rate.

In all, fourteen of the fifteen null hypotheses of this study were accepted. The only significant result was that of a positive relationship between school psychologist-to-student ratios and district growth status. A factor that must be considered in the data was the relatively uneven distribution of LEAs with regard to AYP status (12 LEAs met AYP, 103 LEAs did not meet AYP) and with regard to district growth status (102 LEAs met district growth, 13 LEAs did not meet district growth). The effect of such a distribution cannot be fully accounted for, but it should be noted that a larger, more evenly-distributed sample would have been preferred for greater validity of results.

Another factor that should be taken into account with the findings of this study is the exclusion of contracted services from the data set. If an individual is

not a school district employee, but provides student services through a contractual agreement with the school district, the individual would not be included in the student services staffing totals received in the data from the North Carolina Department of Public Instruction. This was one of the limitations outlined for this study. However, the work of such individuals could have an impact on student achievement and dropout prevention, thus influencing the results of the study. One example within the state of North Carolina is of the Pitt County school district. Though this LEA's data from the North Carolina Department of Public Instruction indicates that they have no school nurses employed for their 22,751 students, in reality the LEA utilizes 16 contracted school nurses as part of a partnership with their local hospital. The school nurses in this example are not school district employees, but instead are hospital employees providing school nurse services within their local schools. Given this example, the data used for this study may not be a complete representation of the full compliment of student services staff working in the North Carolina public schools.

### Implications

The results of this study have implications for education leaders, government officials, student services staff, and public school students. While Jacques and Brorsen's (2002) assertion that expenditures on student support services have a negative relationship to student achievement cannot be verified or refuted by this study, the results indicate that greater expenditures on student support services staffing, for the most part, do not lead to direct improvements in



student achievement or dropout rates. Additionally, while numerous other studies cited in the review of literature in chapter 2 demonstrate positive student outcomes through the efforts of student services staff, the results of this study, for the most part, do not support increasing expenditures on student services staffing if the exclusive rationale is to improve district growth, AYP status, and/or dropout rates. An exception is the significant relationship found between school psychologist-to-student ratios and district growth. Given this finding, education leaders would be supported in providing additional expenditures on staffing for school psychologists in order to improve the academic change, or growth, of students and, therefore, the overall district growth status.

Given the growing body of research, part of which was referenced in chapter 2, supporting the work of student services staff in positively affecting student achievement, the results of this study should be considered carefully within the larger context. Funding and staffing decisions made by education and government leaders based exclusively on the results of this study could ultimately harm students and schools. For example, while this study found that school nurse-to-student ratios did not directly impact district growth status for *all* students, including those who never required the services of the school nurse, what is not measured in this study is whether *only* those specific students whom were provided services by the school nurse demonstrated growth. Further research is recommended that solely measures the achievement of those students directly served by student services staff. Given the roles and

responsibilities of student services staff, these students would most likely be a school's most at-risk. In this study, the fact that all students' achievement data were explored may not fairly reflect the work of student services staff with a smaller subset of the entire student body.

With the sample used in this study consisting exclusively of K-12 public schools in North Carolina, caution should be given when generalizing the findings herein to other states across the nation. Dropout rates differ dramatically across states, despite the common method of calculating dropout rates. One variable that may influence this disparity is the age at which a student is permitted by law to quit school within each state. Additionally, many states do not utilize the growth model in effect in North Carolina public schools. Finally, demographics play a role in the AYP status of school districts. Logically, diverse communities are more likely to have schools with a higher number of AYP subgroups. In these communities, it is a greater challenge for their schools to ensure that all subgroups have met their targets and, thus, for the school to be designated as having met AYP. Within North Carolina, the difference in demographics from one region to the next can vary greatly. Such a difference would also likely be found across the nation. Therefore, the results of this study for the state of North Carolina may not be generalizable to other states or regions that are more or less diverse.

The role of each field within student services, and how that role and its related duties are intended to positively impact student outcomes, was discussed

in the review of related literature. Given the dichotomy between most of the results of this study – excluding the significant finding regarding school psychologist-to-student ratios and district growth – and the growing base of research supporting the work of student services staff outlined in the review of related literature, it is strongly recommended that the actual day-to-day duties of student services staff in North Carolina public schools be more closely examined. For example, if a significant number of school counselors in North Carolina public schools are also performing the responsibilities of their schools' testing coordinator at the behest of their principal or district leadership, it would be immensely difficult for these school counselors to also be able to “deliver a comprehensive school counseling program encouraging all students' academic, career and personal/social development and helping all students in maximizing student achievement” (American School Counselor Association, 2004). Such a scenario is a plausible explanation for the dichotomy between the findings of this study specific to North Carolina public schools and, contrarily, the growing base of national research supporting the efforts of student services staff in improving student outcomes. Further examination by North Carolina's education and government leadership is needed to ensure that there is strong alignment with each respective field within student services and the following: national standards for the role and general duties of the profession, North Carolina's job descriptions for student services staff, and the actual assigned day-to-day responsibilities of student services staff in local districts. Otherwise, unless there

is a strong alignment in this regard for each field within student services, the findings of this study may be misapplied resulting in a negative outcome for students.

Additionally, the results of this study imply that district and/or state policies related to student services staffing are not necessary for improved student achievement outcomes. However, given the aforementioned limitations of this study and the growing body of research referenced in chapter 2 supporting the work of student services staff, education and government leaders would be well-advised to consider the entire body of research before making such conclusions about staffing policies for student services.

#### Recommendations for Further Study

Based upon the findings and implications of this study, the following recommendations for further study are made. First, the significance of school psychologist-to-student ratios and district growth needs to be examined more closely to determine the specific reasons why this correlation exists. The relationship may be due to the nature of the school psychologist's duties and how those duties impact a student's performance on the North Carolina End-of-Grade (EOG) and End-of-Course (EOC) Tests. These duties include determining whether or not a student qualifies for instructional or testing modification, as well as whether or not a student qualifies for special education and related alternate assessments in lieu of the NC EOGs or EOCs. Additionally, further study may help identify an ideal school psychologist-to-student ratio to maximize the effect

of this relationship. An ideal ratio would be beneficial in conjunction with the results of this study for education leaders and government officials when making decisions regarding the funding and staffing of school psychologists in school districts.

Another recommendation for further study would be to examine the quality of the various student services provided in public schools. While this study explored the quantity of student services staffing and its effect on student achievement and dropout prevention, similar research exploring the effect of identified, high quality student services on student achievement and dropout prevention would be useful. The findings of such a study would help to clarify whether the results found here hold true regardless of the skill level and expertise of the student services staff member, or whether this is a variable that has not been accounted for sufficiently in this study. Additionally, a closer examination of the job descriptions, roles and responsibilities of the respective fields within student services is needed in North Carolina's public school system to ensure that the day-to-day activities required of these professionals by their immediate supervisors actually align with the activities found to lead to improved student outcomes in the growing base of research.

Student services staff spend more of their time and effort with the most at-risk students in schools. Therefore, the methodology of this study may be too broad in trying to measure the effect of student services staff-to-student ratios on student achievement and dropout prevention for the entire student body. Rather,

a more focused study examining the achievement and dropout status of the specific students served by student services staff may more accurately measure the impact of these school professionals in this regard.

An extension of this current study that could provide school leaders with additional useful information relative to student services expenditures would be to explore student services staff-to-student ratios and their effect on suspension rates, attendance and truancy, substance abuse rates, and other factors that put students at-risk for school failure and dropout. Student services staff may significantly influence these variables, which in turn may indirectly influence district growth status, AYP status, and dropout rates.

Finally, a problem with this study is the confounding variables that influence student achievement and dropout rates outside of student services staffing ratios. Decisions on programs and class size, for example, vary not only across school district, but also across schools within the same district. While these factors were assumed constant for the purpose of this study, further research that truly held these variables constant, though likely on a smaller scale than this study, may provide more accurate data on the effect of student services staffing ratios on the measured student outcomes.

As noted throughout this study, with the growing demand of public schools to increase student performance despite looming fiscal constraints, educational and governmental leaders need to be able to make informed decisions about schools' funding and staffing that maximize academic outcomes. While this study

aimed to help add to the research base for this specific purpose as it relates to student services staffing, the recommendations for further research outlined herein are strongly encouraged as they would contribute immensely to resolving the research questions of this study: whether or not a significant relationship exists between student services staff-to-student ratios and student achievement, and between student services staff-to-student ratios and dropout rates.

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APPENDIX A: STUDENT ENROLLMENT BY LEA,  
SIXTH MONTH OF 2008-2009 SCHOOL YEAR (NCDPI, n.d.d.)

<u>LEA</u>	<u>STUDENT ENROLLMENT</u>
Alamance-Burlington Schools	22,350
Alexander County Schools	5,515
Alleghany County Schools	1,481
Anson County Schools	3,923
Ashe County Schools	3,208
Avery County Schools	2,224
Beaufort County Schools	7,098
Bertie County Schools	2,849
Bladen County Schools	5,143
Brunswick County Schools	11,641
Buncombe County Schools	25,324
Asheville City Schools	3,691
Burke County Schools	13,800
Cabarrus County Schools	27,452
Kannapolis City Schools	5,068
Caldwell County Schools	12,888
Camden County Schools	1,881
Carteret County Schools	8,108
Caswell County Schools	3,105
Catawba County Schools	17,341
Hickory Public Schools	4,460
Newton-Conover City Schools	2,821
Chatham County Schools	7,552
Cherokee County Schools	3,495
Edenton-Chowan Schools	2,380
Clay County Schools	1,370
Cleveland County Schools	16,366
Columbus County Schools	6,816
Whiteville City Schools	2,395
Craven County Schools	14,577

<u>LEA</u>	<u>STUDENT ENROLLMENT</u>
Cumberland County Schools	52,278
Currituck County Schools	3,943
Dare County Schools	4,731
Davidson County Schools	20,392
Lexington City Schools	3,017
Thomasville City Schools	2,538
Davie County Schools	6,600
Duplin County Schools	8,802
Durham County Schools	31,904
Edgecombe County Schools	7,240
Forsyth County Schools	51,274
Franklin County Schools	8,361
Gaston County Schools	31,951
Gates County Schools	1,915
Graham County Schools	1,150
Granville County Schools	8,805
Greene County Schools	3,275
Guilford County Schools	70,999
Halifax County Schools	4,269
Roanoke Rapids City Schools	2,903
Weldon City Schools	985
Harnett County Schools	18,659
Haywood County Schools	7,742
Henderson County Public Schools	13,000
Hertford County Schools	3,158
Hoke County Schools	7,484
Hyde County Schools	635
Iredell-Statesville County Schools	21,178
Mooresville City Schools	5,387
Jackson County Schools	3,596
Johnston County Schools	31,051
Jones County Schools	1,179
Lee County Schools	9,455

<u>LEA</u>	<u>STUDENT ENROLLMENT</u>
Lenoir County Schools	9,306
Lincoln County Schools	12,065
Macon County Schools	4,302
Madison County Schools	2,597
Martin County Schools	3,906
McDowell County Schools	6,434
Charlotte-Mecklenburg County Schools	131,850
Mitchell County Schools	2,115
Montgomery County Schools	4,323
Moore County Schools	12,174
Nash-Rocky Mount County Schools	17,419
New Hanover County Schools	23,743
Northampton County Schools	2,551
Onslow County Schools	23,265
Orange County Schools	6,985
Chapel Hill-Carrboro City Schools	11,621
Pamlico County Schools	1,382
Pasquotank County Schools	6,006
Pender County Schools	8,119
Perquimans County Schools	1,712
Person County Schools	5,211
Pitt County Schools	22,751
Polk County Schools	2,425
Randolph County Schools	18,563
Asheboro City Schools	4,506
Richmond County Schools	7,724
Robeson County Schools	23,364
Rockingham County Schools	13,760
Rowan-Salisbury County Schools	20,641
Rutherford County Schools	9,311
Sampson County Schools	8,382
Clinton County Schools	3,046
Scotland County Schools	6,509



<u>LEA</u>	<u>STUDENT ENROLLMENT</u>
Stanly County Schools	9,240
Stokes County Schools	7,026
Surry County Schools	8,561
Elkin City Schools	1,200
Mount Airy City Schools	1,576
Swain County Schools	1,873
Transylvania County Schools	3,658
Tyrrell County Schools	581
Union County Schools	37,618
Vance County Schools	7,385
Wake County Schools	137,148
Warren County Schools	2,563
Washington County Schools	1,942
Watauga County Schools	4,445
Wayne County Schools	19,114
Wilkes County Schools	9,947
Wilson County Schools	12,381
Yadkin County Schools	5,883
Yancey County Schools	2,461
<b>TOTAL</b>	<b>1,408,848</b>

APPENDIX B: STUDENT SERVICES STAFF BY LEA,  
SIXTH MONTH OF 2008-2009 SCHOOL YEAR

<u>LEA</u>	<u>NUMBER OF STAFF</u>	<u>STAFF-TO-STUDENT RATIO</u>
Alamance-Burlington Schools	120.72	0.005401
Alexander County Schools	21.00	0.003808
Alleghany County Schools	9.22	0.006226
Anson County Schools	18.90	0.004818
Ashe County Schools	16.80	0.005237
Avery County Schools	10.00	0.004496
Beaufort County Schools	18.64	0.002626
Bertie County Schools	20.87	0.007325
Bladen County Schools	25.00	0.004861
Brunswick County Schools	48.00	0.004123
Buncombe County Schools	120.00	0.004739
Asheville City Schools	22.92	0.006210
Burke County Schools	64.95	0.004707
Cabarrus County Schools	99.83	0.003637
Kannapolis City Schools	18.47	0.003644
Caldwell County Schools	64.74	0.005023
Camden County Schools	7.00	0.003721
Carteret County Schools	43.58	0.005375
Caswell County Schools	14.33	0.004615
Catawba County Schools	58.21	0.003357
Hickory Public Schools	15.00	0.003363
Newton-Conover City Schools	11.20	0.003970
Chatham County Schools	39.21	0.005192
Cherokee County Schools	22.80	0.006524
Edenton-Chowan Schools	10.60	0.004454
Clay County Schools	4.80	0.003504
Cleveland County Schools	67.00	0.004094
Columbus County Schools	27.20	0.003991
Whiteville City Schools	9.00	0.003758

<u>LEA</u>	<u>NUMBER OF STAFF</u>	<u>STAFF-TO- STUDENT RATIO</u>
Craven County Schools	59.74	0.004098
Cumberland County Schools	257.37	0.004923
Currituck County Schools	25.00	0.006340
Dare County Schools	22.03	0.004657
Davidson County Schools	68.10	0.003340
Lexington City Schools	10.97	0.003636
Thomasville City Schools	12.00	0.004728
Davie County Schools	35.52	0.005382
Duplin County Schools	47.00	0.005340
Durham County Schools	144.56	0.004531
Edgecombe County Schools	31.00	0.004282
Forsyth County Schools	219.09	0.004273
Franklin County Schools	32.83	0.003927
Gaston County Schools	160.38	0.005020
Gates County Schools	12.82	0.006695
Graham County Schools	8.38	0.007287
Granville County Schools	28.50	0.003237
Greene County Schools	19.11	0.005835
Guilford County Schools	355.60	0.005009
Halifax County Schools	25.00	0.005856
Roanoke Rapids City Schools	12.00	0.004134
Weldon City Schools	5.98	0.006071
Harnett County Schools	70.55	0.003781
Haywood County Schools	35.41	0.004574
Henderson County Public Schools	41.23	0.003172
Hertford County Schools	22.00	0.006966
Hoke County Schools	35.61	0.004758
Hyde County Schools	5.00	0.007874
Iredell-Statesville County Schools	85.25	0.004025
Mooreville City Schools	21.13	0.003922
Jackson County Schools	19.94	0.005545
Johnston County Schools	121.31	0.003907
Jones County Schools	4.89	0.004148

<u>LEA</u>	<u>NUMBER OF STAFF</u>	<u>STAFF-TO- STUDENT RATIO</u>
Lee County Schools	39.45	0.004172
Lenoir County Schools	38.32	0.004118
Lincoln County Schools	41.92	0.003475
Macon County Schools	18.52	0.004305
Madison County Schools	12.00	0.004621
Martin County Schools	21.74	0.005566
McDowell County Schools	31.32	0.004868
Charlotte-Mecklenburg County Schools	492.52	0.003735
Mitchell County Schools	6.00	0.002837
Montgomery County Schools	20.00	0.004626
Moore County Schools	53.44	0.004390
Nash-Rocky Mount County Schools	92.21	0.005294
New Hanover County Schools	115.12	0.004849
Northampton County Schools	13.85	0.005429
Onslow County Schools	97.53	0.004192
Orange County Schools	45.19	0.006470
Chapel Hill-Carrboro City Schools	88.21	0.007591
Pamlico County Schools	12.72	0.009204
Pasquotank County Schools	31.00	0.005162
Pender County Schools	36.76	0.004528
Perquimans County Schools	10.00	0.005841
Person County Schools	28.28	0.005427
Pitt County Schools	90.61	0.003983
Polk County Schools	12.19	0.005027
Randolph County Schools	75.81	0.004084
Asheboro City Schools	17.96	0.003986
Richmond County Schools	39.00	0.005049
Robeson County Schools	126.09	0.005397
Rockingham County Schools	63.10	0.004586
Rowan-Salisbury County Schools	94.89	0.004597
Rutherford County Schools	34.83	0.003741
Sampson County Schools	29.95	0.003573
Clinton County Schools	13.00	0.004268

<u>LEA</u>	<u>NUMBER OF STAFF</u>	<u>STAFF-TO- STUDENT RATIO</u>
Scotland County Schools	44.66	0.006861
Stanly County Schools	45.00	0.004870
Stokes County Schools	33.96	0.004833
Surry County Schools	40.31	0.004709
Elkin City Schools	3.00	0.002500
Mount Airy City Schools	8.00	0.005076
Swain County Schools	16.60	0.008863
Transylvania County Schools	11.80	0.003226
Tyrrell County Schools	5.00	0.008606
Union County Schools	157.40	0.004184
Vance County Schools	39.90	0.005403
Wake County Schools	548.74	0.004001
Warren County Schools	16.83	0.006567
Washington County Schools	7.00	0.003605
Watauga County Schools	25.41	0.005717
Wayne County Schools	75.64	0.003957
Wilkes County Schools	44.35	0.004459
Wilson County Schools	45.00	0.003635
Yadkin County Schools	26.23	0.004459
Yancey County Schools	14.38	0.005843
<b>TOTAL</b>	<b>6238.03</b>	<b>0.004428</b>

APPENDIX C: SCHOOL COUNSELORS BY LEA,  
SIXTH MONTH OF 2008-2009 SCHOOL YEAR

<u>LEA</u>	<u>NUMBER OF COUNSELORS</u>	<u>COUNSELOR-TO- STUDENT RATIO</u>
Alamance-Burlington Schools	22,350	0.002745
Alexander County Schools	5,515	0.002901
Alleghany County Schools	1,481	0.003525
Anson County Schools	3,923	0.002524
Ashe County Schools	3,208	0.003117
Avery County Schools	2,224	0.001349
Beaufort County Schools	7,098	0.002372
Bertie County Schools	2,849	0.003833
Bladen County Schools	5,143	0.002917
Brunswick County Schools	11,641	0.002663
Buncombe County Schools	25,324	0.003595
Asheville City Schools	3,691	0.004042
Burke County Schools	13,800	0.003341
Cabarrus County Schools	27,452	0.002912
Kannapolis City Schools	5,068	0.002500
Caldwell County Schools	12,888	0.003181
Camden County Schools	1,881	0.002127
Carteret County Schools	8,108	0.003330
Caswell County Schools	3,105	0.003327
Catawba County Schools	17,341	0.002722
Hickory Public Schools	4,460	0.003363
Newton-Conover City Schools	2,821	0.003616
Chatham County Schools	7,552	0.003096
Cherokee County Schools	3,495	0.003119
Edenton-Chowan Schools	2,380	0.002857
Clay County Schools	1,370	0.000730
Cleveland County Schools	16,366	0.002921
Columbus County Schools	6,816	0.002817
Whiteville City Schools	2,395	0.002505

<u>LEA</u>	<u>NUMBER OF COUNSELORS</u>	<u>COUNSELOR-TO- STUDENT RATIO</u>
Craven County Schools	14,577	0.002758
Cumberland County Schools	52,278	0.002973
Currituck County Schools	3,943	0.003297
Dare County Schools	4,731	0.003388
Davidson County Schools	20,392	0.002457
Lexington City Schools	3,017	0.003305
Thomasville City Schools	2,538	0.003546
Davie County Schools	6,600	0.002811
Duplin County Schools	8,802	0.002499
Durham County Schools	31,904	0.003252
Edgecombe County Schools	7,240	0.003315
Forsyth County Schools	51,274	0.002783
Franklin County Schools	8,361	0.002380
Gaston County Schools	31,951	0.003042
Gates County Schools	1,915	0.003133
Graham County Schools	1,150	0.002609
Granville County Schools	8,805	0.003123
Greene County Schools	3,275	0.003026
Guilford County Schools	70,999	0.003229
Halifax County Schools	4,269	0.003279
Roanoke Rapids City Schools	2,903	0.002411
Weldon City Schools	985	0.002030
Harnett County Schools	18,659	0.002656
Haywood County Schools	7,742	0.002895
Henderson County Public Schools	13,000	0.002538
Hertford County Schools	3,158	0.004433
Hoke County Schools	7,484	0.002392
Hyde County Schools	635	0.004724
Iredell-Statesville County Schools	21,178	0.002902
Mooresville City Schools	5,387	0.002809
Jackson County Schools	3,596	0.002781
Johnston County Schools	31,051	0.002670
Jones County Schools	1,179	0.003299

<u>LEA</u>	<u>NUMBER OF COUNSELORS</u>	<u>COUNSELOR-TO- STUDENT RATIO</u>
Lee County Schools	9,455	0.002318
Lenoir County Schools	9,306	0.002936
Lincoln County Schools	12,065	0.003143
Macon County Schools	4,302	0.003375
Madison County Schools	2,597	0.002695
Martin County Schools	3,906	0.003057
McDowell County Schools	6,434	0.003031
Charlotte-Mecklenburg County Schools	131,850	0.001992
Mitchell County Schools	2,115	0.002364
Montgomery County Schools	4,323	0.002776
Moore County Schools	12,174	0.002349
Nash-Rocky Mount County Schools	17,419	0.003384
New Hanover County Schools	23,743	0.003016
Northampton County Schools	2,551	0.003861
Onslow County Schools	23,265	0.002392
Orange County Schools	6,985	0.003256
Chapel Hill-Carrboro City Schools	11,621	0.003495
Pamlico County Schools	1,382	0.002836
Pasquotank County Schools	6,006	0.003330
Pender County Schools	8,119	0.002803
Perquimans County Schools	1,712	0.003505
Person County Schools	5,211	0.003262
Pitt County Schools	22,751	0.002744
Polk County Schools	2,425	0.003753
Randolph County Schools	18,563	0.002682
Asheboro City Schools	4,506	0.002441
Richmond County Schools	7,724	0.002848
Robeson County Schools	23,364	0.002782
Rockingham County Schools	13,760	0.002987
Rowan-Salisbury County Schools	20,641	0.002955
Rutherford County Schools	9,311	0.002900
Sampson County Schools	8,382	0.002499
Clinton County Schools	3,046	0.002298



<u>LEA</u>	<u>NUMBER OF COUNSELORS</u>	<u>COUNSELOR-TO-STUDENT RATIO</u>
Scotland County Schools	6,509	0.003512
Stanly County Schools	9,240	0.003355
Stokes County Schools	7,026	0.003410
Surry County Schools	8,561	0.002840
Elkin City Schools	1,200	0.001667
Mount Airy City Schools	1,576	0.002538
Swain County Schools	1,873	0.003203
Transylvania County Schools	3,658	0.002187
Tyrrell County Schools	581	0.006885
Union County Schools	37,618	0.002749
Vance County Schools	7,385	0.003101
Wake County Schools	137,148	0.002823
Warren County Schools	2,563	0.004226
Washington County Schools	1,942	0.002060
Watauga County Schools	4,445	0.003467
Wayne County Schools	19,114	0.002640
Wilkes County Schools	9,947	0.002800
Wilson County Schools	12,381	0.002504
Yadkin County Schools	5,883	0.002419
Yancey County Schools	2,461	0.002999
<b>TOTAL</b>	<b>3,982.11</b>	<b>0.002827</b>

APPENDIX D: SCHOOL SOCIAL WORKERS BY LEA,  
SIXTH MONTH OF 2008-2009 SCHOOL YEAR

<u>LEA</u>	<u>NUMBER OF SOCIAL WORKERS</u>	<u>SOCIAL WORKER- TO-STUDENT RATIO</u>
Alamance-Burlington Schools	25.75	0.001152
Alexander County Schools	1.00	0.000181
Alleghany County Schools	1.00	0.000675
Anson County Schools	5.00	0.001275
Ashe County Schools	1.00	0.000312
Avery County Schools	4.00	0.001799
Beaufort County Schools	0.00	0.000000
Bertie County Schools	7.95	0.002790
Bladen County Schools	3.00	0.000583
Brunswick County Schools	5.00	0.000430
Buncombe County Schools	13.00	0.000513
Asheville City Schools	5.00	0.001355
Burke County Schools	4.00	0.000290
Cabarrus County Schools	10.89	0.000397
Kannapolis City Schools	2.00	0.000395
Caldwell County Schools	14.00	0.001086
Camden County Schools	0.00	0.000000
Carteret County Schools	5.00	0.000617
Caswell County Schools	0.00	0.000000
Catawba County Schools	6.00	0.000346
Hickory Public Schools	0.00	0.000000
Newton-Conover City Schools	0.00	0.000000
Chatham County Schools	6.00	0.000794
Cherokee County Schools	2.00	0.000572
Edenton-Chowan Schools	0.00	0.000000
Clay County Schools	0.00	0.000000
Cleveland County Schools	10.60	0.000648
Columbus County Schools	3.00	0.000440
Whiteville City Schools	1.00	0.000418

<u>LEA</u>	<u>NUMBER OF SOCIAL WORKERS</u>	<u>SOCIAL WORKER- TO-STUDENT RATIO</u>
Craven County Schools	3.87	0.000265
Cumberland County Schools	65.79	0.001258
Currituck County Schools	2.00	0.000507
Dare County Schools	2.00	0.000423
Davidson County Schools	10.00	0.000490
Lexington City Schools	1.00	0.000331
Thomasville City Schools	0.00	0.000000
Davie County Schools	5.00	0.000758
Duplin County Schools	12.00	0.001363
Durham County Schools	18.90	0.000592
Edgecombe County Schools	4.00	0.000552
Forsyth County Schools	45.90	0.000895
Franklin County Schools	4.00	0.000478
Gaston County Schools	22.10	0.000692
Gates County Schools	4.00	0.002089
Graham County Schools	2.00	0.001739
Granville County Schools	1.00	0.000114
Greene County Schools	5.00	0.001527
Guilford County Schools	74.96	0.001056
Halifax County Schools	7.00	0.001640
Roanoke Rapids City Schools	1.00	0.000344
Weldon City Schools	1.00	0.001015
Harnett County Schools	6.00	0.000322
Haywood County Schools	4.00	0.000517
Henderson County Public Schools	0.00	0.000000
Hertford County Schools	2.00	0.000633
Hoke County Schools	11.71	0.001565
Hyde County Schools	2.00	0.003150
Iredell-Statesville County Schools	9.00	0.000425
Mooreville City Schools	1.00	0.000186
Jackson County Schools	5.94	0.001652
Johnston County Schools	11.00	0.000354
Jones County Schools	0.00	0.000000

<u>LEA</u>	<u>NUMBER OF SOCIAL WORKERS</u>	<u>SOCIAL WORKER- TO-STUDENT RATIO</u>
Lee County Schools	6.00	0.000635
Lenoir County Schools	4.00	0.000430
Lincoln County Schools	3.00	0.000249
Macon County Schools	0.00	0.000000
Madison County Schools	3.00	0.001155
Martin County Schools	3.00	0.000768
McDowell County Schools	4.00	0.000622
Charlotte-Mecklenburg County Schools	79.85	0.000606
Mitchell County Schools	0.00	0.000000
Montgomery County Schools	3.00	0.000694
Moore County Schools	14.00	0.001150
Nash-Rocky Mount County Schools	10.00	0.000574
New Hanover County Schools	31.00	0.001306
Northampton County Schools	2.00	0.000784
Onslow County Schools	11.00	0.000473
Orange County Schools	4.00	0.000573
Chapel Hill-Carrboro City Schools	18.80	0.001618
Pamlico County Schools	4.00	0.002894
Pasquotank County Schools	2.00	0.000333
Pender County Schools	3.00	0.000370
Perquimans County Schools	2.00	0.001168
Person County Schools	5.28	0.001013
Pitt County Schools	12.00	0.000527
Polk County Schools	0.00	0.000000
Randolph County Schools	11.92	0.000642
Asheboro City Schools	0.00	0.000000
Richmond County Schools	8.00	0.001036
Robeson County Schools	36.09	0.001545
Rockingham County Schools	5.00	0.000363
Rowan-Salisbury County Schools	10.00	0.000484
Rutherford County Schools	1.00	0.000107
Sampson County Schools	2.00	0.000239
Clinton County Schools	2.00	0.000657

<u>LEA</u>	<u>NUMBER OF SOCIAL WORKERS</u>	<u>SOCIAL WORKER- TO-STUDENT RATIO</u>
Scotland County Schools	11.00	0.001690
Stanly County Schools	6.00	0.000649
Stokes County Schools	2.00	0.000285
Surry County Schools	5.00	0.000584
Elkin City Schools	0.00	0.000000
Mount Airy City Schools	0.00	0.000000
Swain County Schools	3.00	0.001602
Transylvania County Schools	1.00	0.000273
Tyrrell County Schools	1.00	0.001721
Union County Schools	4.00	0.000106
Vance County Schools	9.00	0.001219
Wake County Schools	69.87	0.000509
Warren County Schools	2.00	0.000780
Washington County Schools	0.00	0.000000
Watauga County Schools	4.00	0.000900
Wayne County Schools	17.92	0.000938
Wilkes County Schools	4.00	0.000402
Wilson County Schools	4.00	0.000323
Yadkin County Schools	3.00	0.000510
Yancey County Schools	3.00	0.001219
<b>TOTAL</b>	<b>932.09</b>	<b>0.000662</b>

APPENDIX E: SCHOOL NURSES BY LEA,  
SIXTH MONTH OF 2008-2009 SCHOOL YEAR

<u>LEA</u>	<u>NUMBER OF NURSES</u>	<u>NURSE-TO- STUDENT RATIO</u>
Alamance-Burlington Schools	17.71	0.000792
Alexander County Schools	4.00	0.000725
Alleghany County Schools	2.00	0.001350
Anson County Schools	4.00	0.001020
Ashe County Schools	3.00	0.000935
Avery County Schools	2.00	0.000899
Beaufort County Schools	0.00	0.000000
Bertie County Schools	2.00	0.000702
Bladen County Schools	6.00	0.001167
Brunswick County Schools	6.00	0.000515
Buncombe County Schools	1.00	0.000039
Asheville City Schools	0.00	0.000000
Burke County Schools	6.00	0.000435
Cabarrus County Schools	0.00	0.000000
Kannapolis City Schools	1.80	0.000355
Caldwell County Schools	4.74	0.000368
Camden County Schools	2.00	0.001063
Carteret County Schools	7.00	0.000863
Caswell County Schools	3.00	0.000966
Catawba County Schools	0.00	0.000000
Hickory Public Schools	0.00	0.000000
Newton-Conover City Schools	1.00	0.000354
Chatham County Schools	6.00	0.000794
Cherokee County Schools	8.90	0.002546
Edenton-Chowan Schools	2.00	0.000840
Clay County Schools	2.00	0.001460
Cleveland County Schools	0.00	0.000000
Columbus County Schools	3.00	0.000440
Whiteville City Schools	2.00	0.000835

<u>LEA</u>	<u>NUMBER OF NURSES</u>	<u>NURSE-TO-STUDENT RATIO</u>
Craven County Schools	7.74	0.000531
Cumberland County Schools	0.88	0.000017
Currituck County Schools	7.00	0.001775
Dare County Schools	1.00	0.000211
Davidson County Schools	0.00	0.000000
Lexington City Schools	0.00	0.000000
Thomasville City Schools	1.00	0.000394
Davie County Schools	7.97	0.001208
Duplin County Schools	13.00	0.001477
Durham County Schools	0.00	0.000000
Edgecombe County Schools	0.00	0.000000
Forsyth County Schools	7.00	0.000137
Franklin County Schools	7.93	0.000948
Gaston County Schools	23.18	0.000725
Gates County Schools	2.82	0.001473
Graham County Schools	2.38	0.002070
Granville County Schools	0.00	0.000000
Greene County Schools	2.80	0.000855
Guilford County Schools	6.85	0.000096
Halifax County Schools	4.00	0.000937
Roanoke Rapids City Schools	4.00	0.001378
Weldon City Schools	1.98	0.002010
Harnett County Schools	6.00	0.000322
Haywood County Schools	1.00	0.000129
Henderson County Public Schools	0.00	0.000000
Hertford County Schools	5.00	0.001583
Hoke County Schools	5.00	0.000668
Hyde County Schools	0.00	0.000000
Iredell-Statesville County Schools	11.80	0.000557
Mooreville City Schools	5.00	0.000928
Jackson County Schools	2.00	0.000556
Johnston County Schools	10.00	0.000322
Jones County Schools	0.00	0.000000

<u>LEA</u>	<u>NUMBER OF NURSES</u>	<u>NURSE-TO-STUDENT RATIO</u>
Lee County Schools	6.80	0.000719
Lenoir County Schools	6.00	0.000645
Lincoln County Schools	0.00	0.000000
Macon County Schools	0.00	0.000000
Madison County Schools	2.00	0.000770
Martin County Schools	6.00	0.001536
McDowell County Schools	4.82	0.000749
Charlotte-Mecklenburg County Schools	0.00	0.000000
Mitchell County Schools	0.00	0.000000
Montgomery County Schools	5.00	0.001157
Moore County Schools	0.00	0.000000
Nash-Rocky Mount County Schools	15.20	0.000873
New Hanover County Schools	0.00	0.000000
Northampton County Schools	2.00	0.000784
Onslow County Schools	21.00	0.000903
Orange County Schools	13.00	0.001861
Chapel Hill-Carrboro City Schools	19.80	0.001704
Pamlico County Schools	4.00	0.002894
Pasquotank County Schools	6.00	0.000999
Pender County Schools	7.00	0.000862
Perquimans County Schools	1.00	0.000584
Person County Schools	3.00	0.000576
Pitt County Schools	0.00	0.000000
Polk County Schools	2.09	0.000862
Randolph County Schools	8.00	0.000431
Asheboro City Schools	4.96	0.001101
Richmond County Schools	9.00	0.001165
Robeson County Schools	23.00	0.000984
Rockingham County Schools	8.00	0.000581
Rowan-Salisbury County Schools	14.00	0.000678
Rutherford County Schools	2.83	0.000304
Sampson County Schools	7.00	0.000835
Clinton County Schools	4.00	0.001313



<u>LEA</u>	<u>NUMBER OF NURSES</u>	<u>NURSE-TO-STUDENT RATIO</u>
Scotland County Schools	8.00	0.001229
Stanly County Schools	6.00	0.000649
Stokes County Schools	5.00	0.000712
Surry County Schools	8.00	0.000934
Elkin City Schools	1.00	0.000833
Mount Airy City Schools	3.00	0.001904
Swain County Schools	5.60	0.002990
Transylvania County Schools	0.00	0.000000
Tyrrell County Schools	0.00	0.000000
Union County Schools	23.80	0.000633
Vance County Schools	7.00	0.000948
Wake County Schools	3.00	0.000022
Warren County Schools	3.00	0.001171
Washington County Schools	3.00	0.001545
Watauga County Schools	3.00	0.000675
Wayne County Schools	0.00	0.000000
Wilkes County Schools	8.50	0.000855
Wilson County Schools	5.00	0.000404
Yadkin County Schools	6.00	0.001020
Yancey County Schools	3.00	0.001219
<b>TOTAL</b>	<b>551.88</b>	<b>0.000392</b>

APPENDIX F: SCHOOL PSYCHOLOGISTS BY LEA,  
SIXTH MONTH OF 2008-2009 SCHOOL YEAR

<u>LEA</u>	<u>NUMBER OF PSYCHOLOGISTS</u>	<u>PSYCHOLOGIST-TO- STUDENT RATIO</u>
Alamance-Burlington Schools	15.90	0.000711
Alexander County Schools	0.00	0.000000
Alleghany County Schools	1.00	0.000675
Anson County Schools	0.00	0.000000
Ashe County Schools	2.80	0.000873
Avery County Schools	1.00	0.000450
Beaufort County Schools	1.80	0.000254
Bertie County Schools	0.00	0.000000
Bladen County Schools	1.00	0.000194
Brunswick County Schools	6.00	0.000515
Buncombe County Schools	14.95	0.000590
Asheville City Schools	3.00	0.000813
Burke County Schools	8.84	0.000641
Cabarrus County Schools	9.00	0.000328
Kannapolis City Schools	2.00	0.000395
Caldwell County Schools	5.00	0.000388
Camden County Schools	1.00	0.000532
Carteret County Schools	4.58	0.000565
Caswell County Schools	1.00	0.000322
Catawba County Schools	5.00	0.000288
Hickory Public Schools	0.00	0.000000
Newton-Conover City Schools	0.00	0.000000
Chatham County Schools	3.83	0.000507
Cherokee County Schools	1.00	0.000286
Edenton-Chowan Schools	1.80	0.000756
Clay County Schools	1.80	0.001314
Cleveland County Schools	8.60	0.000525
Columbus County Schools	2.00	0.000293
Whiteville City Schools	0.00	0.000000

<u>LEA</u>	<u>NUMBER OF PSYCHOLOGISTS</u>	<u>PSYCHOLOGIST-TO- STUDENT RATIO</u>
Craven County Schools	7.93	0.000544
Cumberland County Schools	35.27	0.000675
Currituck County Schools	3.00	0.000761
Dare County Schools	3.00	0.000634
Davidson County Schools	8.00	0.000392
Lexington City Schools	0.00	0.000000
Thomasville City Schools	2.00	0.000788
Davie County Schools	4.00	0.000606
Duplin County Schools	0.00	0.000000
Durham County Schools	21.91	0.000687
Edgecombe County Schools	3.00	0.000414
Forsyth County Schools	23.50	0.000458
Franklin County Schools	1.00	0.000120
Gaston County Schools	17.91	0.000561
Gates County Schools	0.00	0.000000
Graham County Schools	1.00	0.000870
Granville County Schools	0.00	0.000000
Greene County Schools	1.40	0.000427
Guilford County Schools	44.50	0.000627
Halifax County Schools	0.00	0.000000
Roanoke Rapids City Schools	0.00	0.000000
Weldon City Schools	1.00	0.001015
Harnett County Schools	9.00	0.000482
Haywood County Schools	8.00	0.001033
Henderson County Public Schools	8.23	0.000633
Hertford County Schools	1.00	0.000317
Hoke County Schools	1.00	0.000134
Hyde County Schools	0.00	0.000000
Iredell-Statesville County Schools	3.00	0.000142
Mooreville City Schools	0.00	0.000000
Jackson County Schools	2.00	0.000556
Johnston County Schools	17.40	0.000560
Jones County Schools	1.00	0.000848

<u>LEA</u>	<u>NUMBER OF PSYCHOLOGISTS</u>	<u>PSYCHOLOGIST-TO- STUDENT RATIO</u>
Lee County Schools	4.73	0.000500
Lenoir County Schools	1.00	0.000107
Lincoln County Schools	1.00	0.000083
Macon County Schools	4.00	0.000930
Madison County Schools	0.00	0.000000
Martin County Schools	0.80	0.000205
McDowell County Schools	3.00	0.000466
Charlotte-Mecklenburg County Schools	150.03	0.001138
Mitchell County Schools	1.00	0.000473
Montgomery County Schools	0.00	0.000000
Moore County Schools	10.84	0.000890
Nash-Rocky Mount County Schools	8.07	0.000463
New Hanover County Schools	12.50	0.000526
Northampton County Schools	0.00	0.000000
Onslow County Schools	9.89	0.000425
Orange County Schools	5.45	0.000780
Chapel Hill-Carrboro City Schools	9.00	0.000774
Pamlico County Schools	0.80	0.000579
Pasquotank County Schools	3.00	0.000500
Pender County Schools	4.00	0.000493
Perquimans County Schools	1.00	0.000584
Person County Schools	3.00	0.000576
Pitt County Schools	16.18	0.000711
Polk County Schools	1.00	0.000412
Randolph County Schools	6.10	0.000329
Asheboro City Schools	2.00	0.000444
Richmond County Schools	0.00	0.000000
Robeson County Schools	2.00	0.000086
Rockingham County Schools	9.00	0.000654
Rowan-Salisbury County Schools	9.89	0.000479
Rutherford County Schools	4.00	0.000430
Sampson County Schools	0.00	0.000000
Clinton County Schools	0.00	0.000000

<u>LEA</u>	<u>NUMBER OF PSYCHOLOGISTS</u>	<u>PSYCHOLOGIST-TO- STUDENT RATIO</u>
Scotland County Schools	2.80	0.000430
Stanly County Schools	2.00	0.000216
Stokes County Schools	3.00	0.000427
Surry County Schools	3.00	0.000350
Elkin City Schools	0.00	0.000000
Mount Airy City Schools	1.00	0.000635
Swain County Schools	2.00	0.001068
Transylvania County Schools	2.80	0.000765
Tyrrell County Schools	0.00	0.000000
Union County Schools	26.17	0.000696
Vance County Schools	1.00	0.000135
Wake County Schools	88.70	0.000647
Warren County Schools	1.00	0.000390
Washington County Schools	0.00	0.000000
Watauga County Schools	3.00	0.000675
Wayne County Schools	7.25	0.000379
Wilkes County Schools	4.00	0.000402
Wilson County Schools	5.00	0.000404
Yadkin County Schools	3.00	0.000510
Yancey County Schools	1.00	0.000406
<b>TOTAL</b>	<b>771.95</b>	<b>0.000548</b>

APPENDIX G: AVERAGE SCHOOL GROWTH STATUS (MET/NOT MET) BY  
LEA FOR THE 2008-2009 SCHOOL YEAR

<u>LEA</u>	<u>AVERAGE SCHOOL GROWTH STATUS</u>	<u>MET / NOT MET GROWTH</u>
Alamance-Burlington Schools	0.0574	Met
Alexander County Schools	0.1480	Met
Alleghany County Schools	0.1300	Met
Anson County Schools	0.3609	Met
Ashe County Schools	0.2040	Met
Avery County Schools	0.1822	Met
Beaufort County Schools	0.2415	Met
Bertie County Schools	-0.1325	Not Met
Bladen County Schools	0.2171	Met
Brunswick County Schools	0.1712	Met
Buncombe County Schools	0.1598	Met
Asheville City Schools	0.1522	Met
Burke County Schools	0.1817	Met
Cabarrus County Schools	-0.1276	Not Met
Kannapolis City Schools	0.1550	Met
Caldwell County Schools	0.0873	Met
Camden County Schools	0.0620	Met
Carteret County Schools	0.1682	Met
Caswell County Schools	0.0133	Met
Catawba County Schools	0.1025	Met
Hickory Public Schools	0.0070	Met
Newton-Conover City Schools	0.0557	Met
Chatham County Schools	0.1013	Met
Cherokee County Schools	0.0829	Met
Edenton-Chowan Schools	0.0450	Met
Clay County Schools	0.1300	Met
Cleveland County Schools	0.1054	Met
Columbus County Schools	0.0383	Met
Whiteville City Schools	-0.3260	Not Met

<u>LEA</u>	<u>AVERAGE SCHOOL GROWTH STATUS</u>	<u>MET / NOT MET GROWTH</u>
Craven County Schools	0.1188	Met
Cumberland County Schools	0.0303	Met
Currituck County Schools	0.1075	Met
Dare County Schools	0.1591	Met
Davidson County Schools	0.0794	Met
Lexington City Schools	0.1386	Met
Thomasville City Schools	0.0125	Met
Davie County Schools	0.1275	Met
Duplin County Schools	0.0475	Met
Durham County Schools	0.0538	Met
Edgecombe County Schools	0.0647	Met
Forsyth County Schools	0.1591	Met
Franklin County Schools	0.0500	Met
Gaston County Schools	0.0740	Met
Gates County Schools	0.0200	Met
Graham County Schools	0.0967	Met
Granville County Schools	-0.0576	Not Met
Greene County Schools	-0.0560	Not Met
Guilford County Schools	0.1061	Met
Halifax County Schools	-0.0879	Not Met
Roanoke Rapids City Schools	0.0575	Met
Weldon City Schools	-0.0900	Not Met
Harnett County Schools	0.0546	Met
Haywood County Schools	0.1000	Met
Henderson County Public Schools	0.0852	Met
Hertford County Schools	0.0200	Met
Hoke County Schools	0.0175	Met
Hyde County Schools	0.0550	Met
Iredell-Statesville County Schools	0.0960	Met
Mooreville City Schools	0.1243	Met
Jackson County Schools	0.0457	Met
Johnston County Schools	0.0969	Met
Jones County Schools	0.0717	Met

<u>LEA</u>	<u>AVERAGE SCHOOL GROWTH STATUS</u>	<u>MET / NOT MET GROWTH</u>
Lee County Schools	0.0693	Met
Lenoir County Schools	-0.1035	Not Met
Lincoln County Schools	0.1000	Met
Macon County Schools	0.1218	Met
Madison County Schools	0.1883	Met
Martin County Schools	0.1100	Met
McDowell County Schools	0.0958	Met
Charlotte-Mecklenburg County Schools	0.1352	Met
Mitchell County Schools	0.1225	Met
Montgomery County Schools	-0.0890	Not Met
Moore County Schools	0.0250	Met
Nash-Rocky Mount County Schools	0.0868	Met
New Hanover County Schools	0.0268	Met
Northampton County Schools	0.0345	Met
Onslow County Schools	0.0545	Met
Orange County Schools	0.0915	Met
Chapel Hill-Carrboro City Schools	0.1535	Met
Pamlico County Schools	0.0925	Met
Pasquotank County Schools	0.0525	Met
Pender County Schools	-0.0356	Not Met
Perquimans County Schools	0.0450	Met
Person County Schools	0.0190	Met
Pitt County Schools	0.0437	Met
Polk County Schools	0.1500	Met
Randolph County Schools	0.0548	Met
Asheboro City Schools	0.0475	Met
Richmond County Schools	0.0694	Met
Robeson County Schools	0.0312	Met
Rockingham County Schools	-0.1648	Not Met
Rowan-Salisbury County Schools	0.0441	Met
Rutherford County Schools	0.0994	Met
Sampson County Schools	0.1224	Met
Clinton County Schools	0.1925	Met



<u>LEA</u>	<u>AVERAGE SCHOOL GROWTH STATUS</u>	<u>MET / NOT MET GROWTH</u>
Scotland County Schools	0.0276	Met
Stanly County Schools	0.1042	Met
Stokes County Schools	0.0967	Met
Surry County Schools	0.1571	Met
Elkin City Schools	0.1167	Met
Mount Airy City Schools	0.1025	Met
Swain County Schools	0.0200	Met
Transylvania County Schools	0.1089	Met
Tyrrell County Schools	0.0300	Met
Union County Schools	0.1238	Met
Vance County Schools	0.0927	Met
Wake County Schools	0.1055	Met
Warren County Schools	-0.0600	Not Met
Washington County Schools	-0.0220	Not Met
Watauga County Schools	0.1578	Met
Wayne County Schools	0.1397	Met
Wilkes County Schools	0.0845	Met
Wilson County Schools	0.0909	Met
Yadkin County Schools	0.2625	Met
Yancey County Schools	0.2344	Met
	<b>0.0838</b>	<b>102 LEAs Met Growth</b>
<b>AVERAGE / TOTAL</b>		<b>13 LEAs Did Not Meet Growth</b>

APPENDIX H: AYP STATUS (MET/NOT MET) BY LEA

FOR THE 2008-2009 SCHOOL YEAR

<u>LEA</u>	<u>AYP STATUS</u>
Alamance-Burlington Schools	Not Met
Alexander County Schools	Not Met
Alleghany County Schools	Not Met
Anson County Schools	Not Met
Ashe County Schools	Not Met
Avery County Schools	Met
Beaufort County Schools	Not Met
Bertie County Schools	Not Met
Bladen County Schools	Not Met
Brunswick County Schools	Not Met
Buncombe County Schools	Not Met
Asheville City Schools	Not Met
Burke County Schools	Not Met
Cabarrus County Schools	Not Met
Kannapolis City Schools	Met
Caldwell County Schools	Not Met
Camden County Schools	Met
Carteret County Schools	Not Met
Caswell County Schools	Not Met
Catawba County Schools	Not Met
Hickory Public Schools	Not Met
Newton-Conover City Schools	Not Met
Chatham County Schools	Not Met
Cherokee County Schools	Met
Edenton-Chowan Schools	Not Met
Clay County Schools	Not Met
Cleveland County Schools	Not Met
Columbus County Schools	Not Met
Whiteville City Schools	Not Met

<u>LEA</u>	<u>AYP STATUS</u>
Craven County Schools	Not Met
Cumberland County Schools	Not Met
Currituck County Schools	Met
Dare County Schools	Met
Davidson County Schools	Not Met
Lexington City Schools	Not Met
Thomasville City Schools	Not Met
Davie County Schools	Not Met
Duplin County Schools	Not Met
Durham County Schools	Not Met
Edgecombe County Schools	Not Met
Forsyth County Schools	Not Met
Franklin County Schools	Not Met
Gaston County Schools	Not Met
Gates County Schools	Not Met
Graham County Schools	Not Met
Granville County Schools	Not Met
Greene County Schools	Not Met
Guilford County Schools	Not Met
Halifax County Schools	Not Met
Roanoke Rapids City Schools	Not Met
Weldon City Schools	Not Met
Harnett County Schools	Not Met
Haywood County Schools	Not Met
Henderson County Public Schools	Not Met
Hertford County Schools	Not Met
Hoke County Schools	Not Met
Hyde County Schools	Not Met
Iredell-Statesville County Schools	Not Met
Mooresville City Schools	Not Met
Jackson County Schools	Not Met
Johnston County Schools	Not Met
Jones County Schools	Not Met

<u>LEA</u>	<u>AYP STATUS</u>
Lee County Schools	Not Met
Lenoir County Schools	Not Met
Lincoln County Schools	Not Met
Macon County Schools	Not Met
Madison County Schools	Not Met
Martin County Schools	Not Met
McDowell County Schools	Not Met
Charlotte-Mecklenburg County Schools	Not Met
Mitchell County Schools	Not Met
Montgomery County Schools	Not Met
Moore County Schools	Not Met
Nash-Rocky Mount County Schools	Not Met
New Hanover County Schools	Not Met
Northampton County Schools	Not Met
Onslow County Schools	Not Met
Orange County Schools	Not Met
Chapel Hill-Carrboro City Schools	Not Met
Pamlico County Schools	Not Met
Pasquotank County Schools	Not Met
Pender County Schools	Met
Perquimans County Schools	Met
Person County Schools	Not Met
Pitt County Schools	Not Met
Polk County Schools	Met
Randolph County Schools	Not Met
Asheboro City Schools	Not Met
Richmond County Schools	Not Met
Robeson County Schools	Not Met
Rockingham County Schools	Not Met
Rowan-Salisbury County Schools	Not Met
Rutherford County Schools	Not Met
Sampson County Schools	Not Met
Clinton County Schools	Not Met

<u>LEA</u>	<u>AYP STATUS</u>
Scotland County Schools	Not Met
Stanly County Schools	Not Met
Stokes County Schools	Not Met
Surry County Schools	Not Met
Elkin City Schools	Met
Mount Airy City Schools	Met
Swain County Schools	Not Met
Transylvania County Schools	Not Met
Tyrrell County Schools	Met
Union County Schools	Not Met
Vance County Schools	Not Met
Wake County Schools	Not Met
Warren County Schools	Not Met
Washington County Schools	Not Met
Watauga County Schools	Not Met
Wayne County Schools	Not Met
Wilkes County Schools	Not Met
Wilson County Schools	Not Met
Yadkin County Schools	Not Met
Yancey County Schools	Not Met
	<b>12 LEAs Met AYP</b>
<b>TOTAL</b>	<b>103 LEAs Did Not Meet AYP</b>

APPENDIX I: DROPOUT RATE FOR GRADES 9-12 BY LEA

FOR THE 2007-2008 SCHOOL YEAR

<u>LEA</u>	<u>DROPOUT RATE</u>	<u>ABOVE / BELOW STATE AVERAGE</u>
Alamance-Burlington Schools	6.28	Above
Alexander County Schools	5.07	Above
Alleghany County Schools	4.09	Below
Anson County Schools	3.89	Below
Ashe County Schools	6.19	Above
Avery County Schools	3.62	Below
Beaufort County Schools	5.76	Above
Bertie County Schools	4.74	Below
Bladen County Schools	5.14	Above
Brunswick County Schools	5.22	Above
Buncombe County Schools	4.53	Below
Asheville City Schools	5.34	Above
Burke County Schools	4.33	Below
Cabarrus County Schools	4.76	Below
Kannapolis City Schools	7.06	Above
Caldwell County Schools	5.06	Above
Camden County Schools	4.30	Below
Carteret County Schools	3.86	Below
Caswell County Schools	6.22	Above
Catawba County Schools	4.02	Below
Hickory Public Schools	8.65	Above
Newton-Conover City Schools	2.21	Below
Chatham County Schools	3.93	Below
Cherokee County Schools	3.98	Below
Edenton-Chowan Schools	4.07	Below
Clay County Schools	3.86	Below
Cleveland County Schools	6.76	Above
Columbus County Schools	3.90	Below
Whiteville City Schools	5.20	Above

<u>LEA</u>	<u>DROPOUT RATE</u>	<u>ABOVE / BELOW STATE AVERAGE</u>
Craven County Schools	4.56	Below
Cumberland County Schools	3.61	Below
Currituck County Schools	4.79	Below
Dare County Schools	1.68	Below
Davidson County Schools	5.96	Above
Lexington City Schools	5.59	Above
Thomasville City Schools	6.62	Above
Davie County Schools	6.10	Above
Duplin County Schools	5.78	Above
Durham County Schools	4.19	Below
Edgecombe County Schools	6.83	Above
Forsyth County Schools	5.49	Above
Franklin County Schools	5.34	Above
Gaston County Schools	5.69	Above
Gates County Schools	5.88	Above
Graham County Schools	3.82	Below
Granville County Schools	6.86	Above
Greene County Schools	6.32	Above
Guilford County Schools	3.31	Below
Halifax County Schools	6.27	Above
Roanoke Rapids City Schools	7.07	Above
Weldon City Schools	4.86	Below
Harnett County Schools	5.16	Above
Haywood County Schools	6.23	Above
Henderson County Public Schools	4.41	Below
Hertford County Schools	2.95	Below
Hoke County Schools	5.13	Above
Hyde County Schools	3.69	Below
Iredell-Statesville County Schools	3.52	Below
Mooreville City Schools	4.26	Above
Jackson County Schools	7.45	Above
Johnston County Schools	4.92	Below
Jones County Schools	5.21	Above

<u>LEA</u>	<u>DROPOUT RATE</u>	<u>ABOVE / BELOW STATE AVERAGE</u>
Lee County Schools	4.97	Below
Lenoir County Schools	4.46	Below
Lincoln County Schools	4.44	Below
Macon County Schools	4.12	Below
Madison County Schools	7.19	Above
Martin County Schools	5.66	Above
McDowell County Schools	6.10	Above
Charlotte-Mecklenburg County Schools	5.91	Above
Mitchell County Schools	7.08	Above
Montgomery County Schools	6.28	Above
Moore County Schools	4.29	Below
Nash-Rocky Mount County Schools	6.76	Above
New Hanover County Schools	5.40	Above
Northampton County Schools	5.63	Above
Onslow County Schools	4.48	Below
Orange County Schools	4.58	Below
Chapel Hill-Carrboro City Schools	1.53	Below
Pamlico County Schools	4.79	Below
Pasquotank County Schools	4.26	Below
Pender County Schools	3.95	Below
Perquimans County Schools	5.39	Above
Person County Schools	5.38	Above
Pitt County Schools	6.44	Above
Polk County Schools	4.87	Below
Randolph County Schools	5.95	Above
Asheboro City Schools	5.38	Above
Richmond County Schools	4.94	Below
Robeson County Schools	6.29	Above
Rockingham County Schools	6.39	Above
Rowan-Salisbury County Schools	5.54	Above
Rutherford County Schools	6.27	Above
Sampson County Schools	6.04	Above
Clinton County Schools	6.21	Above



<u>LEA</u>	<u>DROPOUT RATE</u>	<u>ABOVE / BELOW STATE AVERAGE</u>
Scotland County Schools	3.79	Below
Stanly County Schools	4.62	Below
Stokes County Schools	5.94	Above
Surry County Schools	4.70	Below
Elkin City Schools	2.47	Below
Mount Airy City Schools	2.77	Below
Swain County Schools	7.45	Above
Transylvania County Schools	5.04	Below
Tyrrell County Schools	4.69	Above
Union County Schools	3.40	Above
Vance County Schools	5.75	Below
Wake County Schools	4.17	Above
Warren County Schools	6.12	Below
Washington County Schools	4.47	Above
Watauga County Schools	5.09	Below
Wayne County Schools	5.25	Below
Wilkes County Schools	6.81	Below
Wilson County Schools	5.51	Below
Yadkin County Schools	3.01	Above
Yancey County Schools	7.07	Below
	<b>4.97</b>	<b>60 LEAs Above State Average</b>
<b>AVERAGE / TOTAL</b>		<b>55 LEAs Below State Average</b>

## APPENDIX J: INSTITUTIONAL REVIEW BOARD APPROVAL LETTER



**University and Medical Center Institutional Review Board**  
East Carolina University • Brody School of Medicine  
600 Moyer Boulevard • Old Health Sciences Library, Room 1L-09 • Greenville, NC 27834  
Office 252-744-2914 • Fax 252-744-2284 • [www.ecu.edu/irb](http://www.ecu.edu/irb)  
Chair and Director of Biomedical IRB: L. Wiley Nifong, MD  
Chair and Director of Behavioral and Social Science IRB: Susan L. McCammon, PhD

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TO: Travis Lewis, 1657 Shady Creek Rd., Ayden, NC 28513

FROM: UMCIRB

DATE: November 5, 2009

RE: Human Research Activities Determined to Meet Exempt Criteria

TITLE: "Educational Leadership and Student Services: The Effect of Student Services Staffing Decisions on Student Achievement and Dropout Prevention in Public Schools."

**UMCIRB #09-0814**

This research study has undergone IRB review on 11.4.09. It is the determination of the IRB Chairperson (or designee) that these activities meet the criteria set forth in the federal regulations for exemption from 45 CFR 46 Subpart A. This human research activity meets the criteria for an exempt status because it is a research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects. *NOTE: 1) This information must be existing on the date this IRB application is submitted. 2) The data collection tool may not have an identifier or code that links data to the source of the information.*

The Chairperson (or designee) deemed this **unfunded** study **no more than minimal risk**. This research study does not require any additional interaction with the UMCIRB unless there are proposed changes to this study. Any changes must be submitted to the UMCIRB for review prior to implementation to allow determination that proposed changes do not impact the activities eligibility for exempt status. Should it found that a proposed change does require more substantive review, you will be notified in writing within five business days.

The following items were reviewed in determination exempt certification:

- Internal Processing Form (received 11.3.09)
- Dissertation Proposal (dated 10.23.09)

It was furthermore determined that the reviewer does not have a potential for conflict of interest on this study.

**The UMCIRB applies 45 CFR 46, Subparts A-D, to all research reviewed by the UMCIRB regardless of the funding source. 21 CFR 50 and 21 CFR 56 are applied to all research studies that fall under the purview of Food and Drug Administration regulations. The UMCIRB follows applicable International Conference on Harmonisation Good Clinical Practice guidelines.**