ABSTRACT

Kimberly J. Mullis, EARLY ALERT PRACTICES IN NORTH CAROLINA COMMUNITY COLLEGES (Under the direction of Dr. David Siegel). Department of Educational Leadership, March 2019.

Early alert systems are widely considered best practice in retention efforts to promote student success and educational goal attainment. The purpose of this quantitative study was to examine early alert practices in North Carolina community colleges, delineate differences between rural and non-rural institutions and among different sized institutions, and determine the impact of early alert systems on student outcomes. Student retention theory and retention frameworks developed by Tinto, Kuh, and Bean and Metzner ungird the study. The overall response rate for this study was 62.1%, with 36 out of 58 North Carolina community colleges electing to participate. Qualtrics survey data were analyzed using SPSS software and statistical tests used to make inferences about early alert system use, effectiveness, and assessment.

Early alert use is on the rise in NC community colleges, as most colleges either have an early alert system or are in the planning process. The amount of technology used and degree of human involvement varies greatly across institutions. Research indicated that institutional commitment, investment of monetary and personnel resources, and campus buy-in are key to early alert success. Study findings indicate institution location and size have no significant impact on early alert system adoption despite the fact that resources can be more limited at smaller and rural colleges.

Further, this study explored early alert system effectiveness and found no statistically significant effect of early alert system use on student retention rates. These findings are consistent with other research findings that cast doubt on early alert system effectiveness. However, colleges with the highest retention rates have early alert systems, and the majority of colleges report improved student outcomes with early alert use. These study findings support

student retention theorists' assertions that early alert systems can improve student academic achievement, retention, and degree completion. Many early alert users do not formally assess early alert system effectiveness, but those that do reported medium cost-effectiveness. Further, colleges indicated early alert system use makes a moderate contribution to campus retention. Given the newness of many early alert systems, there is still much to be researched in terms of implementation and effectiveness.

EARLY ALERT PRACTICES IN NORTH CAROLINA COMMUNITY COLLEGES

A Dissertation

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by

Kimberly J. Mullis

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EARLY ALERT PRACTICES IN NORTH CAROLINA COMMUNITY COLLEGES

by

Kimberly J. Mullis

APPROVED BY:

DIRECTOR OF DISSERTATION:_____
David Siegel, PhD

COMMITTEE MEMBER:_____
Crystal Chambers, PhD

COMMITTEE MEMBER:_____
Marjorie Ringler, EdD

COMMITTEE MEMBER:_____
David Loope, EdD

CHAIR OF THE DEPARTMENT OF EDUCATIONAL LEADERSHIP:

_____
Marjorie Ringler, EdD

DEAN OF THE GRADUATE SCHOOL:

_____
Paul Gemperline, PhD

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CHAPTER 1: INTRODUCTION

Student success is at the heart of community college education. When students are successful in achieving their educational goals, it is a win for the individual, college, and community at large. In particular, degree attainment can be life changing for students in rural communities who gain autonomy and are able to break free from intergenerational poverty (Walpole, 2007). It makes sense to prioritize student retention efforts to facilitate both student and institutional success. Colleges can best equip students with requisite tools for success through early intervention (Seidman, 2012). The purpose of this study was to examine early alert practices in North Carolina community colleges, delineate differences between rural and non-rural institutions and among different sized institutions, and determine the impact of early alert systems on student outcomes.

Community colleges are facing significant challenges in student enrollment and retention. Community college enrollment nationwide has been decreasing in recent years. In 2016, enrollment fell 3.3% from the previous year, followed by a 2.5% decrease in 2017 (Smith, 2017). In every recession since the 1960s college enrollment has increased because it is harder to find and keep jobs, and difficult to be promoted (Parker, 2015). People who would usually forego college choose to enroll during economic downturns, and enrolled students tend to stay in school. The recession of 2008 resulted in a sizable boost in enrollment for community colleges, but as the economy recovers fewer students are going to college. In addition to an improving economy, there other reasons for declining enrollment, such as declining birth rates and federal student loan opt-outs (Goral, 2016). Colleges attempt to grow enrollment through partnerships, state and local initiatives, and program changes; however, recruiting new students can be a challenge, particularly in rural areas. Another way to maintain or grow institutional enrollment is to

increase student retention. However, fewer resources are available to tackle student retention when enrollment is down. In fact, many rural community colleges lack the resources needed to effectively address student needs.

There are numerous reasons why students drop out of college. Factors that increase the risk of attrition include being (a) academically underprepared for college; (b) enrolled part-time; (c) a single parent; (d) financially self-supporting; (e) a caregiver; (f) employed 30 or more hours weekly; and (g) a first-generation college student (Kuh, Kinzie, Bukley, Bridges, & Hayek, 2006). Bean (1980) asserts student background, academics, psychological factors, and environmental variables in particular impact student persistence. Tinto's (1975) institutional departure theory argues that academic and social integration are key to keeping students enrolled. Research consensus is that student attributes along with environmental and institutional factors impact student decisions to drop out.

Institutional policies, programs, practices, and cultures impact student success. Although many variables that contribute to student success elude institutional control, higher education institutions can engage in best practices to improve student outcomes (Kuh et al., 2005). Some colleges and universities are implementing programs to foster bonds between students, enhance faculty/student engagement, and connect students with the institution. Creating supportive networks for students can positively affect academic achievement, retention, and degree completion (Tinto, 1975). According to Upcraft, Gardner, and Barefoot (2005), it takes the entire campus community working together to create a culture focused on first-year student success. Community colleges are also aiming to boost retention and completion rates thorough intrusive advising, whereby academic advisors forge relationships with academically underprepared students. Effective advising is crucial in student retention (Tinto, 1987). Also, the faculty has a

significant influence on student persistence by building relationships with students, especially in the first year (Astin, 1984; Pascarella & Terenzini, 1980; Upcraft et al., 2005). Additionally, early alert systems and intervention programs at colleges to identify and support at-risk students are considered best practice for student retention (Faulconer, et al., 2014; Hudson 2006). Early alert systems are implemented in an effort to monitor student performance and intervene as needed to keep students on track. Ultimately, a college mission that makes student success a priority and is endorsed campus-wide has a positive influence on student outcomes (Kuh et al., 2006). Improving student retention necessitates institutional commitment and investment of fiscal and human resources. Tinto (2007) asserts that "it is one thing to identify effective action; it is another to implement it fully. Second, it is one thing to begin a program; it is another to see it endure" (Tinto, 2007, p. 8). Additionally, Tinto (2007) highlights the importance of data collection and analysis to validate student retention efforts and establish that benefits outweigh costs. It is more important than ever for colleges to plan strategically to identify reasons specific to their school contributing to the phenomenon and to enact change. As each college is unique, there is no one-size-fits-all approach to improvement.

It can be cheaper to retain existing students than to recruit and enroll new ones (Boggs & McPhail, 2016). Faced with budget cuts resulting from declining enrollment, community colleges are exploring and implementing best practices to keep current students. While a single strategy to institutional improvement may yield results, it is advantageous to employ multiple tactics to motivate students to stay on the arduous path of earning a college degree. This study aims to examine early alert practices in North Carolina community colleges based on location and size and to determine the impact of early alert systems on student outcomes.

Background

Student retention has gained attention in recent years due to increased calls for public accountability. North Carolina is among the states that have implemented performance-based funding models and student success initiatives aimed at improving student outcomes. There are 58 community colleges across the state of North Carolina providing accessible and affordable educational opportunities to students. Table 1 disaggregates NC community colleges by geographic location. Categories in Table 1 are based on the National Center for Education Statistics (NCES) locale definitions. The NCES locale designations are based on four overarching types that are consistent with U.S. Census Bureau labels: (a) city; (b) suburban; (c) town; and (d) rural (NCES, 2018). Table 2 disaggregates NC community colleges by size. Categories in Table 2 are derived from NCCCS designations for institutional size based on total FTE, including both budget and non-budget FTE, as reported to the NCCCS office. There are three NCCCS established FTE ranges used for presidential salary guidelines: (a) 0-2499; (b) 2500-6499; and (c) 6500 or more (NCCC, 2017). Institutional size and location matters in student retention efforts (Biemiller, 2016). Rural community colleges serve many students who otherwise would not likely obtain a higher education degree without the community college option. Further, rural community colleges typically have fewer resources available than non-rural institutions, yet they serve a larger proportion of disadvantaged students in need of support. Likewise, larger schools typically have access to more resources than smaller institutions.

Some colleges use early alert systems to improve student outcomes. However, early alert solutions can be costly and require multiple personnel to manage monitoring and intervention. The amount of technology leveraged and the degree of human involvement varies greatly across

Table 1

NC Community Colleges by Geographic Location

Classification	Number of Colleges
Rural	22
Non-rural	36

Table 2

NC Community Colleges by Size (Based on Total FTE)

Classification	Number of Colleges
FTE 0-2499	24
FTE 2500-6499	26
FTE 6500 or more	8

institutions. A study conducted by the John N. Garner Institute revealed smaller colleges are more likely than larger institutions to implement some type of early warning system, many of which have a technology-free referral system (Koch, Griffin, & Barefoot, 2014). Also, smaller two-year colleges monitor all students whereas larger schools focus on a specific population, such as developmental students or those involved in federally funded programs like TRIO. The overwhelming majority of colleges monitor student performance on an ongoing basis, while others report at or before the middle of the semester (Koch et al., 2014). Some schools reach out personally to at-risk students, but many colleges contact students by email or other electronic means. Regardless of early alert systems design, effective programs involve many college personnel working together to get the job done. This study examined early alert practices in North Carolina community colleges taking institutional location and size into account.

Although the majority of research studies report significant benefits of early alert system implementation, there is conflicting research over early alert system efficacy in improving student outcomes (Brothen, Wambach, & Madyun, 2003; Faulconer, Geissler, Majewski, & Trifilo, 2014; Hudson, 2006). The 2014 John N. Gardner Institute national survey found that only 28% of two-year colleges indicated a high return on early alert investment based on cost and educational benefits, 43% reported a medium return, and 16% reported low cost-effectiveness (Koch et al., 2014). Surprisingly, Koch et al. (2014) found that 33% of two-year colleges do not monitor early alert effectiveness. Therefore, in addition to looking at early alert practices based on community college size and location, this study measured the impact of early alert systems on improving student outcomes disaggregated by institutional classification. Additionally, the study examined the extent to which student retention and early alert effectiveness are evaluated.

Problem Statement

Literature concerning student retention is plentiful and intervention strategies are well researched (Astin, 1984; Bean & Metzner, 1985; Kuh et al., 2006; Tinto, 2007); however, there is a disconnect between research and practice. Institutions need to go beyond recognizing that student retention can be improved and actually take action to design and implement effective retention strategies (Tinto, 2007). Further, ongoing assessment of implementation efforts is needed to justify resources and enduring institutional commitment (Tinto, 2007). Early alert systems are widely considered best practice to help instructors, advisors, and student support personnel identify at-risk students and intervene in a timely manner (Kuh, 2005). There has been no comprehensive study conducted exclusively for North Carolina community colleges to investigate early alert practices and the efficacy of early alert implementation. Moreover, a comparison of early alert practices in place at different institutions based on geographical location and size is lacking and warrants examination. Therefore, my research serves to fill a gap in the literature regarding the usage and impact of early alert systems in North Carolina community colleges that may be beneficial to colleges and systems nationwide seeking to implement programs to improve student retention.

Purpose of the Study

The purpose of this study was to examine early alert practices in North Carolina community colleges, delineate differences between rural and non-rural institutions and among different sized institutions, and determine the impact of early alert systems on student outcomes. Student retention models served as a lens for examining early alert system implementation and efficacy.

Conceptual Framework

Student retention has been heavily researched, and has evolved over time to go beyond placing the responsibility of success squarely on students. Instead, modern theories take into account how institutional environment and other factors impact student educational decisions (Bean, 1980; Spady, 1970; Tierney, 1992; Tinto, 1975, 1993). Tinto (1975) is a pioneer in the student retention field and was one of the first to hypothesize that institutional environment matters to student success. Specifically, in addition to student pre-entry attributes, academic and social integration is important early in the college experience (Tinto, 1975). More recently, researchers have extended theory by examining student retention in non-traditional settings and across diverse populations (Seidman, 2012). Further, research finds institutions can improve student outcomes by putting in place policies, programs, and practices to increase student interaction with instructors, advisors, and student support personnel (Kuh et al., 2006). To effectively respond to increased calls for improved student outcomes, institutions need to transition from awareness to action to help students succeed (Tinto, 2007). To that end, this study will apply student retention theory to study implementation and efficacy of early alert systems in North Carolina community colleges.

Research Questions

The overarching research question for this study is: How are community colleges in North Carolina leveraging early alert systems in student retention efforts? There are four sub-questions to further delineate:

Q1: To what extent do North Carolina community colleges use early alert systems in student retention efforts, both overall and by institution location and institution size classifications?

$H_0$1a: There is no statistically significant relationship between early alert use and institution location classification.

$H_0$1b: There is no statistically significant relationship between early alert use and institution size classification.

Q2: To what extent do institution location, institution size, and early alert system use affect student retention rates?

$H_0$2a: There are no effects of institution location, institution size, and early alert system use on student retention rates.

$H_0$2b: There is no effect of institution location on student retention rates.

$H_0$2c: There is no effect of institution size on student retention rates.

$H_0$2d: There is no effect of early alert system use on student retention rates.

Q3: To what extent do institution location, institution size, and type of early alert system affect early alert system contribution to student retention rates?

$H_0$3a: There are no effects of institution location and institution size on early alert system contribution to student retention rates.

$H_0$3b: There is no effect of type of early alert on early alert system contribution to student retention rates.

Q4: To what extent is early alert system effectiveness monitored in North Carolina community colleges, both overall and by institution location and size classification?

$H_0$4a: There is no significant relationship between early alert effectiveness monitoring and institution location classification.

$H_0$4b: There is no significant relationship between early alert effectiveness monitoring and institution size classification.

Overview of Methodology

I used a cross-sectional quantitative research approach to examine early alert practices in North Carolina community colleges, delineate differences between rural and nonrural institutions and among different sized institutions, and determine the impact of early alert systems on student outcomes. For this study, a survey entitled "Early Alert Practices in North Carolina Community Colleges" was sent to each of the 58 North Carolina community colleges in an effort to gain a comprehensive understanding of early alert practices across the state. The survey was administered through East Carolina University Qualtrics electronic survey software. The survey was anonymous to alleviate concerns and any reluctance to participate. Survey data is securely stored in Qualtrics and on my ECU OneDrive. A college designee appointed at the discretion of each participating college president completed the survey. The survey contains 15 questions to solicit requisite information regarding institutional characteristics, student retention, and early alert practices and assessment practices (see Appendix C). Although the survey instrument includes some open-ended questions, most are close-ended questions with checklist answer formats, and one item has a Likert scale. Prior to distribution, the survey instrument underwent cognitive interview testing and formal pretesting (Fowler, 2014) in an effort to safeguard for accurate, credible, and replicable data. The study was carefully designed to ensure instrumentation quality as outlined in Chapter 3.

A preparatory email was sent to each college president to provide an introduction to the survey, inform them of survey procedures, and solicit participation. The survey was anonymous, which is important to reduce any hesitancy in response. Colleges were given 20 days to respond to the survey, and an email reminder was sent out on day 15. Data analysis resumed immediately upon receipt of completed surveys using Statistical Package for Social Sciences (SPSS) software.

Definitions

The following definitions are used for the purposes of this study:

Attrition - institutional departure prior to successful completion of student program of study.

Early alert system - a formal, proactive feedback system though which students and student support personnel are alerted to early indication of at-risk behavior (e.g., low grades, poor attendance).

Early alert system effectiveness - the degree to which the early alert system is successful in producing desired institutional results.

Persistence – the desire and action of a student to stay within the higher education system from the beginning year through degree completion (Seidman, 2012).

Retention – the ability of an institution to retain a student from admission through graduation (Seidman, 2012).

Rural North Carolina Community college - North Carolina community college serving counties with population densities of 250 people per square mile or less.

Assumptions

There were two crucial assumptions for this quantitative study. First, I assumed participants would be candid in their responses, and forthcoming with pertinent information. To promote transparency, I ensured the survey was completely anonymous through sound methodology. Second, I assumed participants would view the study as worthwhile and useful to individual institutions and community colleges as a whole and therefore be willing to participate. I think college officials will recognize the utility of this study and its potential to aid community

colleges in identifying best practices in student retention and implement changes that lead to improved student outcomes.

Scope and Delimitations

This study is delimited to community colleges in North Carolina. Therefore, research findings may not necessarily be extrapolated to community college systems with different profiles. The study is also restricted in that a single individual from each participating college likely completed the survey. There may be other personnel within the organization that more valuable insight into student retention activities or who are more willing to disclose information. Additionally, alternative alert system products and implementation procedures may yield different results. This study only considers early alert practices used at participating NC colleges and therefore may not be all inclusive of approaches used in other states. Another delimitation arises from the cross-sectional study design, which prevents drawing causal relationships among variables. Quantitative methodology also narrows the study to include primarily numerical data, omitting data regarding the real lived phenomenon. Although the survey includes some open-ended responses, most questions are close-ended questions and measured using a Likert scale or discrete listing of responses. Qualitative methodology may add valuable detailed information to offer deeper insight into early alert practices in North Carolina.

Limitations

Limitations of this study involve voluntary response and disclosure. The early alert survey was sent to all NC community colleges and institutions were encouraged to respond; however, participation was voluntary. Despite survey anonymity, some college representatives may have been reluctant to divulge information perceived to be negative about the institution. Further, although the overall response rate was high, the small population size made it difficult to

reach statistical significance for hypothesized models. Underrepresentation of large institutions made it hard to draw conclusions regarding differences in populations based on size.

Significance of the Study

This quantitative study on early alert practices in NC community colleges is significant on several levels. First and foremost, this study can impact the lives of students as institutions investigate and implement effective policies and programs aimed at student retention. Increased retention leads to student success and educational goal attainment. Second, improved student outcomes serve a public good as the community benefits from an educated citizenry. For many rural students in particular, a community college education is their only pathway out of poverty. Therefore, it is of utmost importance to students and the community at large that community colleges focus on improving student outcomes. Third, implementation of successful retention strategies will ideally lead to improved institutional outcomes. The college institution reaps financial and reputational benefit of student success. Last, other community colleges both inside and outside North Carolina may benefit from this study in learning how sister institutions are tackling retention. Additionally, Tinto (2007) calls for research that identifies successful programs and practices that lead to student success and stand the test of time. Most broadly, this study seeks to further the study of early alert system efficacy in an overall higher education systems context.

Organization of the Study

This study is organized into five chapters to give the reader a thorough understanding of the problem of interest. The first chapter provides an overview of the study and justification for research of the problem. The purpose is clearly stated to provide readers with a blueprint for the study. Also, research questions and sub-questions are enumerated to narrow the focus of the

study. Chapter two provides a review of literature. The first part of chapter two explains the theoretical frameworks considered and rationale for theory selection. The remaining part of the literature review discusses relevant issues directly related to the problem of interest. Chapter three explains research methodology used to study the problem of interest. The methodology section details participant selection strategy, instrumentation, data collection procedures, and data analysis methods. Next, chapter four reports study findings. Data is summarized, organized, and synthesized into emergent themes. The last chapter of the study is dedicated to a thorough discussion of the findings in context of the literature review. Further, conclusions and implications of the study are explicated and recommendations are given for future research.

Summary

Student retention has always been a concern, but increased accountability at the state and federal levels has led to heightened institutional awareness and action. Research finds that academic and social integration early in the educational experience is an important factor in student retention. Tinto (2007) calls for institutions to move beyond theory to actually put in place lasting programs to improve student success. Further, colleges need to assess efficacy of implemented programs and practices to garner continued support for intervention strategies. Higher education institutions are effectively leveraging technology to retain students. In particular, institutions implement early alert systems to coordinate campus efforts and provide student support through effective communication and timely intervention. This research study examines early alert practices in North Carolina community colleges, analyze differences between rural and non-rural institutions and based on college size, and determine the impact of early alert systems on student outcomes.

CHAPTER 2: LITERATURE REVIEW

The purpose of this study is to examine early alert practices in North Carolina community colleges, delineate differences between rural and non-rural institutions and among different sized institutions, and determine the impact of early alert systems on student outcomes. This literature review provides a history of college student retention research and theory. Additionally, this chapter explicates rural community college student challenges and relevant background information regarding statewide policies and initiatives that impact retention efforts. Last, the narrative explores how early alert systems are used to improve student outcomes. A review of the literature will serve as a directional guide in research question development and instrumentation design. Altogether, the literature review reflects thorough research pertinent to the problem of interest, and provided me with background knowledge needed to design a worthwhile study.

Student Retention Theory

College student retention came on the horizon in the 1930s as researchers studied the student attrition phenomenon. Initially, student retention analysis primarily focused on student attributes from a psychological viewpoint, and neglected institutional influence (Knoell, 1960; Marsh, 1966; Sexton, 1965; Waller, 1964). Spady (1970) posited that retention research up to the 1970s was deficient in "theoretical and empirical coherence" and called for a fundamental shift in focus (p. 64). Numerous theories developed after 1970 provide alternative frameworks for understanding student persistence and retention. Rather than automatically attributing attrition to student factors, modern theories take into account how institutional environment and other factors impact student educational decisions (Bean, 1980; Spady, 1970; Tierny, 1992; Tinto, 1975, 1993).

Spady (1970) was one of several early scholars to draw on Durkheim's theory of suicide to explain how student interaction with the institutional environment impacts student retention. Suicide theory contends that lack of societal integration results in broken ties (Spady, 1970). Theorists researched attrition using academic and social elements of the institution as explanatory variables (Astin, 1975; Spady, 1970; Tinto, 1975). Tinto's (1975) institutional departure model provided a formal structure to frame the new student retention research focus. Tinto (1975) asserted that it is necessary to balance academic integration and social integration to retain students. Tinto's theory emphasized student pre-entry attributes and the importance of interactions between students and institutional members to integrate students early in the matriculation process (Tinto, 1975). Tinto's framework specified three stages in the student college integration process: (a) dissociation from previous groups (e.g., families, high school, local communities); (b) changeover; and (c) academic and social amalgamation with the college community (Seidman, 2012). Further research gave credence to Tinto's theory (Astin, 1975, 1984; Pascarella & Terenzini, 1980). Astin (1984) contended most students leave college due to lack of involvement, and found that increased involvement positively impacts student persistence. Further, Astin (1984) identified student characteristics and prior academic performance as significant predictor variables for college persistence. Terenzini, Rendon, Upcraft, Millar, Allison, and Jalomo (1994) focused on the integration process and found the process to be an interrelated series of family, interpersonal, academic, and organizational action that shape student scholarship and persistence. Further, the nuances of the process are dependent upon student background, attributes, and ambition (Terenzini et al., 1994). Collectively, major theoretical models and studies of student retention concur that student engagement and integration in the first year of student enrollment is pivotal in effecting positive student outcomes

(Tinto, 2007). Tinto's 1993 revised departure model added several variables to his original model, such as external obligations and reenrollment intentions that impact student persistence. Figure 1 provides a diagram of Tinto's Institutional Departure Model of Student Retention.

Models have expanded to include various sociological, psychological, and economic theories to explain student attrition (Seidman, 2012). Bean (1980) found fault with Spady's and Tinto's reliance on Durkheim's suicide theory, and advocated for an alternate model viewing student attrition as analogous to job turnover. According to Bean (1980), background characteristics, such as prior academic performance and socioeconomic status, as well as student contentment are important factors in student decision to persist. Further research led to a non-traditional student attrition model that emphasizes environmental factors over social variables. Bean and Metzner (1985) considered four variables that impact student persistence: (a) academic (e.g., attendance, study habits); (b) background (e.g., age, ethnicity, high school grades); (c) psychological (e.g., satisfaction, goal setting); and (d) environmental (e.g., finances, employment, family issues). Bean and Metzner (1985) found that, for non-traditional students, environmental factors had more impact on student persistence than any other variable. Figure 2 provides a diagram of the Nontraditional Undergraduate Student Attrition Model (Metzner & Bean, 1987).

Tinto's framework is widely accepted in the context of traditional university students, but several researchers have called into question the degree of applicability to community college and commuter student populations (Seidman, 2012). Research expanded to study student retention outside of the traditional university mainstream to include two-year schools and diverse populations (Berger, 2001; Borglum, 2000; Nora, Hagedorn, & Pascarella, 1996; Tinto, 1998). Pascarella, Duby, and Iverson (1983) found that Tinto's model was not as predictive in non-

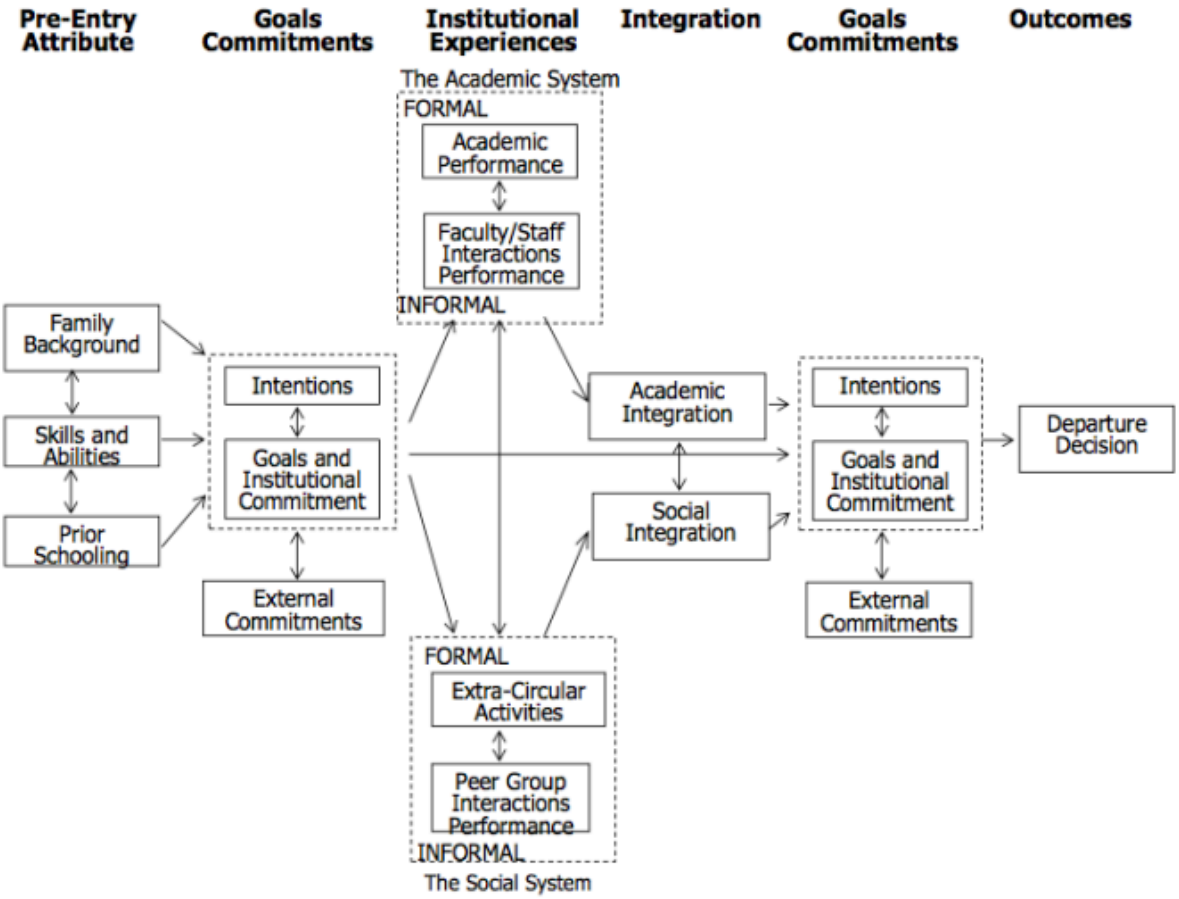

Figure 1. Tinto's Institutional Departure Model of student retention.

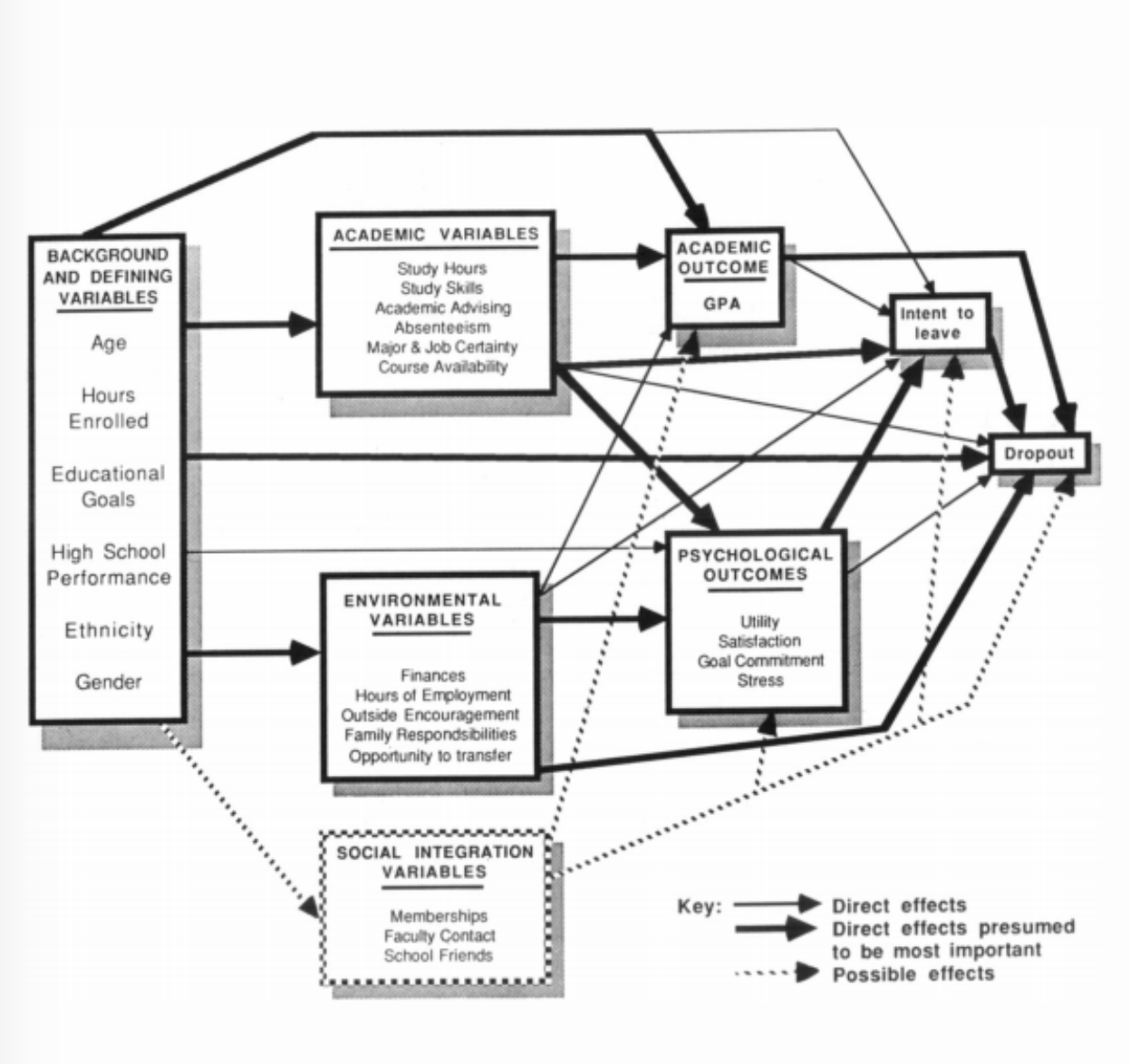

Figure 2. Nontraditional Student Attrition Model by Bean and Metzner.

traditional college settings due to the fact that students have less opportunity for campus involvement. However, Tinto (1987) counters that campus integration is still crucial for community college and commuter students despite the heavy influence of external factors on student decisions to drop out. Further, first year learning communities can promote student persistence through academic and social integration (Tinto, 1997).

Further, Cabrera, Nora, and Castaneda (1992) worked to integrate Tinto's departure model and Bean's attrition model. Research on the combined model confirmed that student attrition is best explained by taking into account both student and institutional characteristics coupled with student intent to persist (Cabrera et al., 1992). Further, Kuh et al. (2006) present a comprehensive framework for student engagement that differs from other pipeline models in featuring multiple student pathways and educational junctures. The first pathway component includes student factors prior to college enrollment that are predictor variables for college success (i.e., academic preparation, background). Next, Kuh et al. (2006) consider the college encounter that includes student factors (i.e. work ethic, interactions, etc.) and institutional impact (i.e., resources, policies, etc.). At the center of the framework is student and institutional interaction, which is where higher education institutions can engage in action that affects student success and retention. Kuh et al. (2006) contend the last part of the framework that measures the degree to which students are prepared to function in society is a key indicator of student success. Ultimately, according to Kuh et al. (2006), no single student retention theory alone is sufficient to fully explore all variables related to college student success.

In a climate of heightened accountability and limited funding, retention remains a top concern in higher education. Many state funding models include accountability components to reward institutions that have a positive impact on student outcomes, such as graduation and

retention rates (Hockaday & Puyear, 2017). Seidman (2012) asserts that early identification of at-risk students and timely intervention is key to keeping students enrolled. Further, Seidman (2012) contends colleges should engage in intensive intervention before classes start when feasible, as a proactive measure to increase student success. Also, faculty has a crucial role in student retention efforts, both outside the classroom and engaging in innovative classroom practices (e.g., learning communities) to foster student connections (Tinto, 1997, 2007). Pascarella (1980) found that informal student-faculty relationships have a positive impact on student retention, particularly in the first year. Additionally, effective academic advising is central to retaining students (Tinto, 1987). As Tinto (2007) points out, student retention is a team effort that requires institutional members, faculty and staff, to work together.

Rural Community College Student Retention

Geography matters when it comes to community college enrollment and retention. Rural communities are often in a perpetual cycle of poverty, unable to break free generation after generation. In fact, according to Hall (2003), tackling the poverty cycle that plagues rural communities is one of the biggest tasks of modern day rural community colleges. The 2000 census reported that North Carolina has a 12.5% poverty rate, which is one of the highest in the nation (Hall, 2003). North Carolina counties are considered to be in persistent poverty when rates exceed 18% for three consecutive decades (Hall, 2003). Oftentimes, rural community college students do not see post-secondary education as a realistic option, creating a barrier to admission. Also, financial challenges, such as transportation and childcare, present hurdles that cause students to drop out.

Rural community colleges serve some of the most impoverished and underprepared students. There are twice as many socially and economically disadvantaged students than

privileged students enrolled in community colleges (Turcotte, 2016). In comparison, only one in 14 four-year university students are classified as having low socioeconomic status (Turcotte, 2016). Rural community college students face unique challenges not experienced by non-rural students. Low-income students struggle to pay increasing tuition, as financial aid determinations do not take into account the multitude of problems rural students face (Bradley, 2010). Also, rural students also have trouble accessing distance education courses because they cannot afford Internet service or have a poor connection due to living in remote locations. According to Cohen, Brewer, and Kisker (2013), minority students are overrepresented in community colleges and face more hardship than their peers. For these students, "the choice is not between the community college and a senior residential institution; it is between the community college and nothing" (Cohen et al., 2013, p. 63). Many of these students would not further their education without the community college option. In sum, rural community college students face a multitude of barriers in seeking a college degree.

In the 1980s, state and federal student financial aid became a major funding contributor for community colleges. More than two-thirds of full-time community college students received federal financial aid in 2007, and 25% of those obtained federally backed loans (Cohen et al., 2013). Financial aid is a necessity for impoverished students in rural communities. Small rural community college students receive more financial aid and amass more student loan debt than students enrolled in larger community colleges (Hardy & Katsinas, 2008). Default rates are high for occupationally and economically disadvantaged students. As a result, laws changed to bar institutions with a 30% or higher default rate from participation in the federal loan program. Community colleges are increasingly opting out of the federal loan program, fearing that high student default rates will result in loss of all types of federal funding, such as Pell grants. Almost

25% of the 1,097 community colleges nationwide do not participate in the federal loan program (Douglas-Gabriel, 2016). Minority students are more negatively impacted by federal loan opt-outs than their white counterparts. In Alabama, for example, 61% of African-American students have no access to loans, whereas 34% of white students are adversely affected (Douglas-Gabriel, 2016). Also, students who do not qualify for Pell grants and are denied access to federal loans struggle to pay for school. Pell grants constitute 68% of rural community college student financial aid (Hardy & Katsinas, 2008). In 2017, summer Pell grants was reinstated to provide 150% of the regular award amount, so students can progress more quickly toward degree completion (Kreighbaum, 2017). Other federal aid, state and local aid, private assistance, and institutional grants are additional sources of financial support. Twice as many rural versus non-rural community college students receive institutional grants, which is evidence of rural community college commitment to their students (Hardy & Katsinas, 2008).

Community College Enrollment and Retention

The number of non-traditional students enrolling in community college decreased by 5.7% in 2015 and the trend is expected to continue (Goral, 2016). The number of high school students dual-enrolled or attending early college schools on some community college campuses has also declined, mostly due to lower birth rates (Goral, 2016). Community colleges flourish in times of economic hardship and suffer in recovering and prosperous economies. As a result of the 2008 recession, post-secondary enrollment soared as people turned to education as a way to prepare them for new job opportunities. In 2011, as the economy started to recover, community college enrollment started to decline nationwide. Meanwhile, university enrollment stabilized and private for-profit institutions continued to drop significantly. The economy is continuing to improve, with the most jobs created in the construction industry, education sector, and medical

professions. All key industries, except mining and logging, reported job increases in 2015 (Juszkiewicz, 2016). However, even though new jobs are becoming available, many workers will still need to increase their skills and training. Therefore, community college enrollment is projected to stabilize or increase moving forward (Juszkiewicz, 2016). There are other reasons for recent enrollment declines in higher education besides an improving economy, such as declining birth rates. Another cause of declining enrollment is an increase in the number of students opting not to go to college in pursuing careers in technology fields (Goral, 2016). Yet another phenomenon that is leading to enrollment declines is federal loan opt-outs (Cohen et al., 2013). Public two-year institutions are struggling to find balanced solutions to enrollment and retention while maintaining an open door philosophy.

Community colleges across the nation are offsetting enrollment declines by partnering with the K-12 sector to offer dual enrollment programs that allow high school students to earn both high school and college credit for courses (Smith, 2017). North Carolina community colleges have implemented successful programs aimed at increasing enrollment while allowing high school students to take college courses free of charge (Chen, 2016). In 2012, North Carolina instituted the Career and College Promise program to provide three distinct pathways for students to earn dual credit for coursework. Attending community college classes early gives students an edge in university pursuits and career prospects. Although high school partnerships boost enrollment, community colleges are uneasy about future sustainability as non-traditional student populations steadily decrease (Smith, 2017).

Additionally, several states are boosting enrollment by offering free community college education. In 2014, Tennessee became the first state to offer students a tuition-free community college education. The Tennessee Promise Program initially only covered high school graduates,

but has since expanded to cover all adults in the state who want to pursue a higher education. Tennessee has also redesigned curriculum to focus on eight clearly defined programs as opposed to offering a plethora of options. The Tennessee Promise program has been successful in increasing community college enrollment in the state by 30% (Sanburn, 2017). Oregon, New York, and Rhode Island have instituted similar free community college programs. The trend seems to be catching on, as Arkansas and Kentucky are currently in the planning phase (Sanburn, 2017). Although former president Barack Obama was unable to secure free community college for all U.S. citizens, many states are passing legislation and making innovative changes to make college more accessible for citizens.

Another way that community colleges are boosting enrollment is by offering more online classes and expanding online programs. Community colleges lead universities in offering online options, making college more accessible for students (Straumsheim, 2016). Over 90% of community colleges surveyed by Inside Higher Ed reported they offer at least one online degree, up from 66% in 2010 (Straumsheim, 2016). One way for community colleges to retain students who opt to enter the workforce is to offer classes to accommodate student schedules. Online courses and programs allow students to balance work, school, and personal responsibilities. However, distance learning is not appropriate for all students.

In addition to tackling college affordability, there are efforts underway to revitalize vocational education. For example, California recently invested $206 million to market and improve vocational education (Krupnick, 2017). For years the prevailing push has been toward baccalaureate degree attainment, and vocational education has largely been deemphasized. Changing the title of vocational education to career and technical education was unsuccessful in wooing parents and students to community colleges (Krupnick, 2017). According to Georgetown

University's Center on Education and the Workforce, there are 30 million jobs available that do not demand a four-year degree that pay $55,000 annually (Krupnick, 2017). The National Federation of Independent Business reported that 48% of small businesses were struggling to find qualified workers with requisite skills in industry and trade fields, demonstrating a clear need for vocational education (Sanburn, 2017). Further, the U.S. Department of Education reports vocational degree holders are more likely than baccalaureate graduates to find employment in their chosen career field (Krupnick, 2017). Community colleges offer bargain-priced training and programs tailored to meet the needs of nontraditional students.

Retaining current students is a way to maintain or grow institutional enrollment when new student recruitment is unfruitful. However, there are fewer resources available to tackle the retention problem when enrollment is down due to decreased funding. In fact, many community colleges lack the resources needed to provide sufficient student support, such as counseling and childcare services. Community colleges are finding creative ways to form a support system for students. For example, Austin Community College in Texas repurposed a closed mall into a computer-learning lab (Sanburn, 2017). Also, Northern Virginia Community College has strategically partnered with George Mason University to boost graduation rates and facilitate a smooth college transfer experience (Sanburn, 2017). Many community colleges, such as Pierce College in Washington, have focused on providing more robust tutoring programs and requiring students to complete a college success course (Sanburn, 2017). Providing free tuition, books, and transportation for full-time students led to a 100% increase in graduation rates at the City University of New York (Sanburn, 2017). On the whole, community colleges across the Nation are finding creative ways to do more with fewer resources.

Community College Funding and Budgeting

Student retention remains a top concern in higher education as funds are limited and budgets are tight (Tinto, 2007). Nationally, community colleges receive 42% of their funding from the state, 24% from local government, 18% from institutional tuition and fees, 6% from federal government, and 10% from other sources (Vaughn, 2006). As federal, state, and local funding declines, many community colleges engage in fundraising to generate additional revenue (Reed, 2017). Since nearly one-quarter of funding comes from local taxes, rural community colleges suffer due to low property values in rural communities (Hicks & Jones, 2011).

The North Carolina governor, legislators, and general assembly have traditionally recognized the importance of education, and budgeted funds needed to support community colleges. In fact, the North Carolina state government provides more financial support for community colleges than most other states (Turcotte, 2016). However, state funding for North Carolina community colleges is based on student enrollment, which is problematic since enrollment varies while instructional and infrastructure costs remain steady. The current funding formula is inequitable because it does not take into account that rural community colleges need more funding per student to provide students adequate resources needed to be successful (Fluharty & Scaggs, 2007). State support for North Carolina community colleges is transitioning from a full-time equivalent (FTE) model to a performance based funding (PBF) version. PBF models gained popularity in the 1990s, but were largely abandoned due to state revenue declines in 2000 (Cohen et al., 2013). By 2004, only a few states had community college PBF models in place. However, PBF has been revisited and adopted in many states as public demands for accountability in the last decade have increased. Funding allocations under the PBF model are based on outcomes rather than enrollment. The NCCCS PBF model identifies specific measures

that colleges are measured by relative to one another. Individual colleges are eligible to receive full or prorated funds based on meeting or exceeding system-wide performance goals. Community college presidents concur that PBF leads to greater accountability and targeted budgeting, but more PBF funds are needed (Turcotte, 2016). More data is required to determine if PBF is effective in achieving desired outcomes.

Future changes to the NCCCS funding model depend on legislative action. One possible change is to modify the funding formula to include unduplicated headcount in determining academic support allocations (Turcotte, 2016). Using headcount as a funding determination would ensure that both full-time and part-time students have adequate resources (Turcotte, 2016). Another suggestion is to institute a stop-loss plan to limit the amount of funding a college can lose from one year to the next. According to Turcotte (2016), stop-loss measures would safeguard colleges experiencing steep enrollment declines. Third, ensuring that tiered funding completely covers costs of technical classes would enable colleges to offer priority programs. Another proposal is to tweak the PBF model to reward colleges for improved institutional performance and modify performance measures to align with state goals (Turcotte, 2016). Finally, implementing needs-based funding would provide at-risk students with the resources needed to be successful (Turcotte, 2016). Funding based on student need at individual institutions would give disadvantaged student populations the wherewithal to overcome obstacles to success.

The public is holding states more accountable for producing successful graduates by implementing specific performance measures tied to funding. Ultimately, the state seeks to support institutions that can demonstrate positive contributions to the social and economic wellbeing of the public (Hockaday & Puyear, 2017). As states provide medical and social

services for baby boomer retirees there will be reduced appropriations for education, forcing colleges to be more fiscally responsible ("Community college CEOs," 2013). In recent years, North Carolina has focused on improving student outcomes, which has led to funding decreases for individual community colleges. For example, the Developmental Education Initiative reduced the amount of remedial coursework needed, so developmental course enrollment declined. More recently, the Career and College Ready Graduate Alignment (CCRG) Partnership was developed to provide developmental math, reading, and English remediation to high school seniors, so that community college developmental education requirements are met prior to graduation. Also, the Career and College Promise initiative and CAA overhaul created clear pathways to graduation, which resulted in students enrolling in fewer unneeded courses (Turcotte, 2016). Ultimately, Turcotte (2016) contends that tying funding to improved student outcomes may be a hindrance to achieving desired goals.

Fiscal concerns top the list of significant challenges faced by NCCCS presidents today. Colleges are increasingly forced to adopt a business model approach, focusing on productivity and accountability. However, community colleges are unlike businesses in that they are restricted in their ability to generate revenue (Price et al., 2016). Fundraising is not as profitable for community colleges as it is for universities, and grants are generally less lucrative (Price et al., 2016). Also, community colleges have limited control over student enrollment and establishing tuition and fees. Reducing costs in key areas can help offset reduced state funding. Also, streamlining processes and increasing faculty workload are strategies used to reduce administrative costs. However, increased faculty workload results in less time devoted to student advising and retention efforts. Yet another way to offset deficits is to maximize use of facilities through creative scheduling and leasing space (Cohen et al., 2013). Other strategies include

limiting classes with low enrollment, freezing non-essential travel, and increasing class sizes. Ultimately, limited funding causes institutions to enact cost-saving measures that may adversely affect student retention efforts.

Accountability

Higher education institutions are increasingly focused on student retention and completion as federal and state legislation tie funding to institutional performance and student success. Accountability came to the forefront of the higher education landscape as public concern grew over increasing tuition, excessive student loan debt, and transparency. Conditions prompted various agencies to take proactive measures to address issues. The federal government formed the Spellings Commission to examine accountability in higher education, which promoted national awareness. Other agencies began to focus on accountability measures as preemptive action to anticipated formal regulation. The American Association of Community Colleges was among the groups that implemented changes leading to increased accountability (Boggs & McPhail, 2016). Further, states are opting to put accountability measures in place to improve completion and retention rates (Boggs & McPhail, 2016). The State of North Carolina passed legislation in 1999 to establish accountability measures for community colleges. The performance model has evolved over time, and now includes 7 measures that are tied to funding: (a) basic skills student progress; (b) student success rate in college-level English courses; (c) student success rate in college-level math courses; (d) first year progression; (e) curriculum student completion; (f) licensure and certification passing rate; and (g) college transfer performance. Performance measures and methodology are reviewed every three years, and adjustments are made as appropriate. Harbour and Nagy (2005) researched performance funding from the perspective of campus leaders, and found that administrators and faculty have different

viewpoints. Specifically, administrators reported program and staffing changes in an effort to improve institutional performance, whereas faculty contended that there was little impact on actual teaching and learning (Harbour & Nagy, 2005). Boggs and McPhail (2016) researched performance-based funding and reported concerns over ineffectiveness, compromising standards, and negative impacts on disadvantaged students. In fact, research revealed that performance-based funding yields minimal improvement in student outcomes (Boggs & McPhail, 2016). Community colleges have diverse missions, making it difficult to measure institutional performance. Students attend community colleges for different reasons, making a universal approach to performance measurement inappropriate (Boggs & McPhail, 2016). Rural community colleges must fulfill the same reporting requirements as larger schools with fewer personnel and resources. Community colleges and universities both report performance data using the same Integrated Postsecondary Education Data System (IPEDS), even though the institutions vastly differ. Recognizing the lack of appropriate measures, industry partners created a Voluntary Framework of Accountability (VFA) to assist community colleges in performance evaluation and measuring institutional effectiveness. Also, the Post-Collegiate Outcome Initiative began in 2015 to promote dialog about student outcomes after college and develop appropriate measurement instruments. Additionally, some state community college systems use scorecards to rate institutions for improvement purposes and consumer information (Boggs & McPhail, 2016).

Accreditation is another source of accountability, and is important in higher education because it promotes educational excellence and continuous institutional improvement. The federal government relies on regional accreditation agencies to oversee higher education institutions, and requires colleges be accredited to participate in federal financial aid programs.

There are seven regional accrediting agencies in the United States, one of which is the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) that serves North Carolina. The accreditation process typically involves institutions performing a self-evaluation prior to an on-site visit from accreditors who prepare a formal report. Since SACSCOC can essentially shut community college doors through sanctions, institutions spend much time and resources on maintaining compliance. In addition to regional accreditors, there are numerous other specialized agencies that certify schools based on compliance in specific areas and programs, such as distance education. Ultimately, heightened accountability in higher education impacts how institutions operate and allocate human and fiscal resources.

Community College Initiatives

The United States Department of Education embarked on a mission in 2009 to increase college completion. The 2020 College Completion initiative aims for the United States to lead the world in college graduates. In 2015, completion rates remained largely unchanged, in part due to the community college sector that serves non-traditional students (Pierce, 2015). Despite efforts to improve student outcomes, the 2015 national community college completion rate was 39% and fell to 30% in 2016 (National Student Clearinghouse Research Center (NSCRC), 2017). Also, the NSCRC (2017) reported that student attrition is largely attributed to factors unrelated to academic performance. As a result, focus at the federal, state, and institutional level is on improving student success by focusing on access and retention, university transfer, and degree completion. Over 50% of U.S. states have completion agendas tied to funding, with several backed by state law (NSCRC, 2017).

The longstanding and overarching focus of the NCCCS is creating student success. The NC State Board of Community Colleges adopted the SuccessNC framework in 2009 to serve as a

guide for improving student outcomes. The Bill and Melinda Gates Completion by Design initiative served as a model in developing the framework. Upon adoption of the SuccessNC initiative, NCCCS president Scott Rawls said “no longer will success be reflected in how many students make it through our registration lines, but more importantly, by how many students walk across our graduation stages and attain meaningful credentials of value” (NCCC, 2013, p. 7). The SuccessNC framework highlights four stages in the community college student encounter: (a) connection; (b) entry; (c) progress; and (d) completion. These critical junctures provide opportunities for students to gain or lose momentum along the pathway to obtaining a degree or credential. Multiple NCCCS initiatives were developed for each of the four stages. Even though the planning phase of SuccessNC is complete, implementation of initiatives continues at varying rates and stages across the NCCCS. In 2016, the Kresge Foundation and Bill & Melinda Gates Foundation invested in five new NCCCS Student Success Centers that are directed by the Jobs for the Future (JFF) organization. The centers support SuccessNC initiatives and serve as a hub to bring community college partners together to work on improving student success. Success centers offer professional development and training, provide technical support, and bring think tanks together to find creative ways to promote student achievement. The North Carolina Guided Pathways to Success framework guides success center efforts to foster student access, equity, learning, and credential attainment. Additionally, several NCCCS colleges participate in the Achieving the Dream nationwide initiative that promotes increasing student access to education, degree completion, and economic opportunity. The framework focuses on improved outcomes for all students, particularly minorities and economically disadvantaged individuals. Seven areas of institutional competency undergird the framework, and include (a) leadership and vision; (b) data and technology; (c) equity; (d) teaching and learning; (e)

engagement and communication; (f) strategy and planning; and (g) policies and practices. Most recently, the Align4NCWorks initiative followed the SuccessNC effort, and focuses on workforce development. The goals of the initiative are alignment, responsiveness, engagement, and accountability. Align4NCWorks advocates for strong partnerships between community colleges, business and industry, workforce development entities, K-12 schools, and economic development. Collaboration is cited as the key ingredient to workforce development success. Collectively, NCCCS initiatives are consistent with the national agenda to improve student outcomes.

Early Alert Systems

Higher education institutions can improve student outcomes by putting effective programs in place and creating a culture centered on student success (Kuh et al., 2006). For example, early alert systems are used to help faculty, advisors, and student support services personnel identify at-risk students to facilitate intervention. Astin (1975) researched the relationship between student and institutional characteristics to retention, and first introduced the concept of an early warning system to prevent students from dropping out. Early alert systems can be used to facilitate communication between faculty, staff, and students, and promote student success (Faulconer et al., 2014; Hudson 2006). Villano, Harrison, and Chen (2018) found that using an early alert system leads to increased student retention by getting students the help they need early. Despite all the institutional hype about student retention, many higher education organizations do not prioritize retention and fail to devote significant resources to the cause (Tinto, 2007).

Early alert systems are becoming increasingly popular as institutions seek to retain students. The marketplace is full of products and services aimed at improving student retention.

However, commercial solutions are expensive, so institutions must weigh cost versus return. Also, there are ethical concerns about institutional use of student data without expressed permission, which can be partially addressed by early alert system opt out features (Villano et al., 2018). Comprehensive planning and effective leadership is required to guide the institution in implementing an early alert system (Villano et al., 2018). Institutions should carefully choose a product that meets the needs of all parties (Faulconer et al., 2014). In 2013, Virginia adopted Starfish retention software statewide. Dwyer (2017) researched the effectiveness of early alert implementation in Virginia and found a positive impact on student persistence, especially for developmental education students. Other colleges, such as East Carolina University (Asby, 2015) and University of North Carolina at Charlotte (Moore-Harrison, McEachnie, Cassidy, & Taylor, 2015) report success with Starfish early alert. Moore-Harrison et al. (2015) emphasize the importance of faculty involvement in making early alert a success. Instructors send positive feedback to students through Starfish or raise early warning flags to point students in the right direction, which then triggers an email notification to be sent to academic advisors. Also, Starfish software integrates with learning management systems, such as Blackboard and Moodle, to enable the instructor to closely monitor student progress and flag students with poor academic performance. Students need to be educated about how Starfish works and be reminded that flags are not punitive, but instead intended to facilitate student success (Moore-Harrison et al., n.d.). In addition to Starfish, other commercial products are available to support intervention strategies in higher education. For example, Aviso, Ellucian CRM Advise, Early Alert Retention Software (EARS), MAP-Works, SEAtS, Oracle, and DropGuard are some other popular early alert technology solutions.

Some colleges forego pricey software and instead opt to develop in-house early alert systems. For example, Morehead State University developed and implemented an internal early intervention process to target absenteeism and found the solution to be an effective way to increase attendance (Hudson, 2006). Also, New River Community College (NRCC) in the Appalachian mountains of Virginia implemented a homegrown early-alert model to best fit the unique characteristics of their institution. Since early alert implementation in 2014, the NRCC student withdrawal rate reduced by 25% and the fall to spring student retention rate increased by 6.9% (Williams, 2018). NRCC credits the success to their intentional engagement model of student support that couples in-house technology with a specialized team that provides individualized help to struggling students (Williams, 2018). Also, the University of New Orleans (UNO) created a homegrown early alert whereby institutional faculty and staff contact struggling students via the college data management system (Hoffshire, Ralston, & Lacho, 2013). The alert triggers student services counselors to reach out to the student for a meeting and work with advisors to get students academic and personal help needed. Lack of faculty buy-in, understaffing, and connecting with part-time students were among the biggest implantation obstacles UNO encountered (Hoffshire et al., 2013). Another in-house system was designed at Virginia Commonwealth University in 2008 that also indicated faculty involvement was an issue in addition to students declining interventions (Varney, 2008). Further recommendations for study included studying the correlation between college policies and procedures, such as late registration, to student early alert flags (Varney, 2008).

Some studies show that early alert systems may not be as effective as purported (i.e., Brothen et al., 2003; Eimers, 2000; Koch et al., 2014; Maack, 2001). For example, a study conducted by Brothen et al. (2003) found student behavior and academic performance was not

significantly impacted by an early alert system. Student work ethic and personal issues were found to be stronger variables in predicting student performance than participation in an early alert system (Brothen et al., 2003). However, the majority of research studies report significant benefits of implementing early alert systems. For example, Davidson County Community College (DCCC) implemented a grant-funded early alert system, Starfish, and reported a significant increased course retention rate from fall 2011 to fall 2012 (Hobsons, 2013). Similarly, Central Carolina Community College (CCCC) reported increased student retention and degree completion using Aviso software (Aviso, 2018). Subsequently, nine other North Carolina Community Colleges adopted Aviso software fall 2016, partially funded by a First in the World grant, in an effort to improve student outcomes. This expanded Carolina Works initiative, which culminates in fall 2020, aims to confirm success coaching effectiveness and viability (CCCC, 2018). In general, researchers point to the need for further longitudinal studies to confirm short-term studies regarding the efficacy of early alert systems (Faulconer et al., 2014; Hudson, 2006).

Summary

Altogether, the literature review provided me with background knowledge necessary to embark on a study of early alert practices in North Carolina community colleges. Research on student retention theory revealed that although major theoretical models differ in focus, the consensus is that student attributes along with environmental and institutional factors impact student decisions to drop out. In the end, no single all-encompassing student retention theory emerged to fully explore all variables related to college student success. It is necessary to consider the context, student population served, internal and external environment, and organizational capabilities prior to developing a plan of action to improve student retention. The next chapter details the overall study design and methodology.

CHAPTER 3: METHODOLOGY

Student retention has gained attention in recent years due to increased calls for public accountability. North Carolina is among the states that have implemented performance-based funding models and student success initiatives aimed at improving student outcomes. Some colleges use early alert systems to improve student outcomes. However, early alert solutions can be costly and require multiple personnel to manage monitoring and intervention. The amount of technology leveraged and the degree of human involvement varies greatly across institutions. Although the majority of research studies report significant benefits of early alert system implementation, there is conflicting research over early alert system efficacy in improving student outcomes. This cross-sectional quantitative study provides an analysis of early alert practices in North Carolina community colleges, differences between rural and non-rural institutions and based on college size, and early alert system impact on student outcomes. This section explains research methodology by providing a detailed description of research questions and hypotheses, participants, design and instrumentation, and analysis procedures.

Research Questions and Hypotheses

This quantitative study answered the following research questions and tested the following hypotheses:

Q1: To what extent do North Carolina community colleges use early alert systems in student retention efforts, both overall and by institution location and institution size classifications?

$H_0$1a: There is no statistically significant relationship between early alert use and institution location classification.

$H_0$1b: There is no statistically significant relationship between early alert use and institution size classification.

Q2: To what extent do institution location, institution size, and early alert system use affect student retention rates?

$H_0$2a: There are no effects of institution location, institution size, and early alert system use on student retention rates.

$H_0$2b: There is no effect of institution location on student retention rates.

$H_0$2c: There is no effect of institution size on student retention rates.

$H_0$2d: There is no effect of early alert system use on student retention rates.

Q3: To what extent do institution location, institution size, and type of early alert system affect early alert system contribution to student retention rates?

$H_0$3a: There are no effects of institution location and institution size on early alert system contribution to student retention rates.

$H_0$3b: There is no effect of type of early alert on early alert system contribution to student retention rates.

Q4: To what extent is early alert system effectiveness monitored in North Carolina community colleges, both overall and by institution location and size classification?

$H_0$4a: There is no significant relationship between early alert effectiveness monitoring and institution location classification.

$H_0$4b: There is no significant relationship between early alert effectiveness monitoring and institution size classification.

Participants

The population of interest is the 58 community colleges in North Carolina. The sample consists of the 36 NCCCS colleges that elected to participate in the study. Participant details are reported in Chapter 4.

Design and Instrumentation

A quantitative survey instrument was used to gather necessary data to investigate early alert practices in NC community colleges. Quantitative methodology is appropriate for this study because close-ended questions are posed that give quantifiable answers. The cross-sectional survey "Early Alert Practices in North Carolina Community Colleges" was administered through East Carolina University Qualtrics electronic survey software. In an effort to reduce error in survey results and ensure quality data, the study was carefully designed to ensure instrumentation quality as outlined in subsequent paragraphs.

Krathwohl and Smith (2005) recommend looking at past surveys to gather ideas about appropriate questions and format. In keeping with that recommendation, a self-developed survey instrument for this study (see Appendix C) was adapted from two national student retention surveys. Six questions are based on the ACT (2010) national survey conducted on student retention at public four-year colleges and universities. Seven questions are based on the 2014 John N. Gardner national survey on two-year college success initiatives. Question and answer wording was modified as necessary to fit the community college context. I secured permission from both agencies to borrow survey material. Additionally, there are two completely self-developed questions on the survey that are necessary to gather demographic information on college location and size. Most survey questions are close-ended with a checklist answer format. However, the survey instrument also includes some open-ended sections for comments and one

question with a Likert scale answer format. Additionally, I analyzed constructed questions to appropriately order survey items, and verify simplicity and clarity.

Additionally, Krathwohl and Smith (2005) advise pretesting of new instruments to address validity concerns. First, the proposed survey questions were critically reviewed through formal cognitive testing to ensure that question wording and ordering is valid, thus establishing face and content validity. According to Fowler (2014), pretesting questions through interviews is an effective way to ensure respondents are consistently able to comprehend and answer questions. Therefore, the first step was to interview five senior level community college administrators to discuss survey items and ask them to verbalize perceived meaning by thinking aloud for each question to determine if (a) questions are consistently understood; (b) requisite information is provided; and (c) responses accurately measure the questions of interest. Administrators participating in pretesting procedures were representative of location and size strata to address wording differences among subgroups and ensure a common understanding of terms. Also, since the survey is self-administered, interviewing is a necessary precursor to detect issues not readily evident in the actual pretest (Fowler, 2014). Based on careful analysis of cognitive interviews, I made needed revisions to the survey instrument. Individuals involved in pretesting procedures did not participate in the actual survey. Further, Fowler (2014) asserts that computer administered surveys facilitate contingency question navigation, but emphasizes that proofreading is of paramount importance to ensure questions are skipped according to design. Therefore, the survey was carefully constructed in Qualtrics, proofread, and formally pretested to verify there are no errors and to determine completion time.

Once the instrument was finalized, a preparatory email was sent to each of the 58 North Carolina community college presidents to introduce the survey and encourage participation (see

Appendix C). Next, I sent a follow-up email to each participating college president that included the actual Qualtrics survey link. I copied the administrative assistant to each president on emails in an effort to increase response rates. An email reminder was sent out on day 15, and surveys were completed by day 20. The survey was anonymous to alleviate concerns and any reluctance to participate. Survey data is securely stored in Qualtrics and on my ECU OneDrive.

Data Analysis

Data analysis was conducted using Statistical Package for Social Sciences (SPSS) software. Qualtrics survey data was exported into SPSS, email addresses redacted, and data cleaned and coded. Frequency distributions for survey responses were constructed and graphs generated as appropriate. Descriptive statistical analysis examined distributions of survey question data regarding institution classification, retention rate and monitoring, early alert system practices, and early alert system effectiveness. Data from the free-response question at the end of the survey was also coded, analyzed, and summarized. Additionally, measures of central tendency and dispersion were computed to further describe survey data.

Further, hypothesis testing was used to test validity of claims made about early alert system use, effectiveness, and assessment in North Carolina community colleges. All testing was conducted using an $\alpha = .05$ level of significance. Statistical tests include Chi-square test of independence, Fisher's exact test, linear regression, and logistic regression. Independent variables include institution location, institution size, early alert use, and type of early alert. Dependent variables include early alert use, student retention rate, early alert system contribution to student retention, and early alert system effectiveness monitoring. Table 3 provides a detailed list of study variables with levels of measurement and corresponding tests to be performed.

The Chi-square test of independence was used to test hypotheses about relationships between the following categorical variables of interest: (a) institution location classification and early alert use; (b) institution size classification and early alert use; (c) institution location classification and early alert effectiveness monitoring; and (d) institution size classification and early alert effectiveness monitoring. Data was summarized in two-way contingency tables and expected counts computed to determine if there is a statistically significant difference in the observed and expected counts. As appropriate, the Fisher Exact test was used instead of the Chi-square test of independence if contingency tables contain expected cell counts fewer than five. Additionally, predictive analysis explored the effects of institution location, institution size, and early alert use on student retention rates. Linear regression was used to model relationships among variables and determine strength of predictor variables both overall and by individual effect. Regression analysis was also performed to determine the effect of institution location, institution size, and type of early alert on early alert system contribution to student retention rates. In addition, logistic regression was used to examine the effects of institution location and institution size on early alert effectiveness monitoring.

Summary

This section detailed the methodology used to examine early alert practices in North Carolina Community Colleges, delineate differences between rural and nonrural institutions and based on college size, and determine the impact of early alert systems on student outcomes. Collectively, descriptive and inferential statistics was used to analyze survey results and draw conclusions about early alert system use, effectiveness, and assessment in North Carolina community colleges. A presentation of the findings is included in the next chapter.

Table 3

Hypothesis Tests

Research Hypothesis	Independent Variable(s)	Dependent Variable	Statistical Test
$H_0$1a	Institution location (nominal)	Early alert use (nominal)	Chi-square test of independence/Fisher's exact test
$H_0$1b	Institution size (ordinal)	Early alert use (nominal)	Chi-square test of independence/Fisher's exact test
$H_0$2a	Institution location; Institution size; Early alert use (nominal/ordinal)	Student retention rate (ratio)	Linear Regression
$H_0$2b	Institution location (nominal)	Student retention rate (ratio)	Linear Regression
$H_0$2c	Institution size (ordinal)	Student retention rate (ratio)	Linear Regression
$H_0$2d	Early alert use (nominal)	Student retention rate (ratio)	Linear Regression
$H_0$3a	Institution location; Institution size (nominal/ordinal)	Amount of early alert system contribution to student retention rates (ordinal)	Linear Regression
$H_0$3b	Type of early alert (nominal)	Amount of early alert system contribution to student retention rates (ordinal)	Linear Regression
$H_0$4a	Institution location (nominal)	Early alert system effectiveness monitoring (nominal)	Chi-square test of independence/ Logistic Regression
$H_0$4b	Institution size (nominal)	Early alert system effectiveness monitoring (nominal)	Chi-square test of independence/Logistic Regression

CHAPTER 4: FINDINGS

The purpose of this quantitative study was to examine early alert practices in North Carolina community colleges, delineate differences between rural and non-rural institutions and among different sized institutions, and determine the impact of early alert systems on student outcomes. The following research questions and hypotheses guided the study:

Q1: To what extent do North Carolina community colleges use early alert systems in student retention efforts, both overall and by institution location and institution size classifications?

$H_0$1a: There is no statistically significant relationship between early alert use and institution location classification.

$H_0$1b: There is no statistically significant relationship between early alert use and institution size classification.

Q2: To what extent do institution location, institution size, and early alert system use affect student retention rates?

$H_0$2a: There are no effects of institution location, institution size, and early alert system use on student retention rates.

$H_0$2b: There is no effect of institution location on student retention rates.

$H_0$2c: There is no effect of institution size on student retention rates.

$H_0$2d: There is no effect of early alert system use on student retention rates.

Q3: To what extent do institution location, institution size, and type of early alert system affect early alert system contribution to student retention rates?

$H_0$3a: There are no effects of institution location and institution size on early alert system contribution to student retention rates.

$H_0$3b: There is no effect of type of early alert on early alert system contribution to student retention rates.

Q4: To what extent is early alert system effectiveness monitored in North Carolina community colleges, both overall and by institution location and size classification?

$H_0$4a: There is no significant relationship between early alert effectiveness monitoring and institution location classification.

$H_0$4b: There is no significant relationship between early alert effectiveness monitoring and institution size classification.

This chapter reports descriptive and inferential findings from the survey addressing early alert practices in North Carolina community colleges.

Demographics

The population of interest is the 58 community colleges in North Carolina. The sample consists of the 36 NCCCS colleges that elected to participate in the study. The overall response rate is 62.1%. Responses are disaggregated in Table 4, Table 5, and Table 6 based on location, size, and early alert use, respectively. As indicated in Table 4, 16 out of 22 (72.7%) rural and 20 out of 36 (55.6%) nonrural NC community colleges participated. Response rate compilation by college size indicates 17 out of 24 (70.8%) colleges with 0 – 2499 FTE participated; 16 out of 26 (61.5%) colleges with 2,500 – 6,499 FTE participated; and 3 out of 8 (37.5%) colleges with FTE 6500 or more participated, as summarized in Table 5. Further, 27 out of 44 (61.4%) of schools with an early alert system and 9 out of 14 (64.2%) without an early system currently in place participated, as indicated in Table 6. Additionally, six out of ten (60%) First in the World grant colleges responded to the survey. I received a follow-up email from 14 out of the 36 participating college presidents requesting a report of the findings.

Table 4

Survey Response Rates by NC Community Colleges Location

Classification	N	n	Response Rate (%)
Rural	22	16	72.7
Non-rural	36	20	55.6

Table 5

Survey Response Rates by NC Community Colleges Size

Classification	N	n	Response Rate (%)
FTE 0-2499	24	17	70.8
FTE 2500-6499	26	16	61.5
FTE 6500 or more	8	3	37.5

Table 6

Survey Response Rates by NC Community Colleges Early Alert Use

Early Alert Usage	N	n	Response Rate (%)
Yes	44	27	61.4
No	14	9	64.2

Research Question One Findings

Research question one addresses the extent of North Carolina community colleges early alert system use in student retention efforts, both overall and by institution location and institution size classifications.

Descriptive Findings

Overall, 75% of survey respondents use an early alert system. As disaggregated in Table 7, 14 out of 20 (70%) responding nonrural NC community colleges use an early alert system, versus 81.3% (13 out of 16) rural colleges. Data analysis on early alert system use by institution size revealed that all of the NC community colleges with FTE 6500 or more use an early alert; 11 out of 16 (68.8%) colleges with FTE 2,500-6,499 use early alert; and 13 out of 17 (76.5%) colleges with FTE 0-2,499 use an early alert system (see Table 8).

There were 22 participants out of the 27 who responded to the survey question asking about how long an early alert system has been in place at their institution. Most colleges (59.1%) indicated that the early alert system had been in place at their institution for three or more years. The remaining (40.9%) participating colleges have early systems two years old or less (see Table 9).

Further, the survey instrument included some open-ended sections for comments. Qualitative data were compiled in a single document, and coded to capture the meaning of the contents. Analysis of qualitative survey comments yielded two major themes. The first theme gleaned from data is that cost significantly impacts the decision to adopt an early alert system. Five out of nine survey respondents with no early alert system are in the planning phase of early alert system implementation. Three of the five commented about concern over the expense of early alert. One respondent has looked at several student retention systems, but cites cost as a

Table 7

Early Alert Use by NC Community Colleges Location

Classification	n	Number Using Early Alert	Percent Using Early Alert
Nonrural	20	14	70
Rural	16	13	81.3

Table 8

Early Alert Use by NC Community Colleges Size

Classification	n	Number Using Early Alert	Percent Using Early Alert
FTE 0-2499	17	13	76.5
FTE 2500-6499	16	11	68.8
FTE 6500 or more	3	3	100

Table 9

Age of Early Alert Systems

Age	Number of Colleges	Percent of Colleges
1 year or less	3	13.6
2 years	6	27.3
3 years	4	18.2
4 years	0	0
More than 4 years	9	40.9

barrier to choosing a platform and implementing the program. A smaller grant-funded institution commented that keeping the early alert system will be challenging if there is not assistance to help defray the cost. One school shared they are grappling with the decision about which system is the best in terms of performance and cost effectiveness. Another is currently in the process of writing a grant to purchase an early alert system from a commercial vendor, and stated "we plan to purchase the product either way."

The second major theme that emerged from qualitative analysis is that campus buy-in is an issue. One respondent said the biggest problem with early alert system implementation is getting all faculty on board in equal measure. Similarly, a grant-funded college using the AVISO early alert system commented that the technology component is great; however getting campus wide buy-in has been a challenge. Another participant had a form for years that faculty could access and complete, but it was rarely used; the college is striving for better outcomes with a new integrated process and faculty training. One of the four colleges not planning to adopt an early alert system shared they had an early alert system in the past but found it too cumbersome to administer effectively. Another without plans to adopt an early alert points to a number of other student supports with the intent of keeping students enrolled and engaged.

Inferential Findings

Research hypothesis $H_0$1a states there is no statistically significant relationship between early alert use and institution location classification. A Fisher's exact test was performed, and no relationship was found between early alert use and institution location classification, (p = .700, FET). At the 0.05 level of significance, the decision is to fail to reject $H_0$1a, meaning there is no evidence of a significantly significant relationship between early alert use and institution location classification.

Likewise, no relationship was found between early alert use and institution size classification, (p = .742, FET). At the 0.05 level of significance, the decision is to fail to reject $H_0$1b, meaning there is no evidence of a significantly significant relationship between early alert use and institution size classification.

Research Question Two Findings

Research question two addresses the extent institution location, institution size, and early alert system use affects student retention rates. Survey questions three and five directly address retention practices and retention goals; survey question four asks respondents to record current institutional first-year to second-year retention rates as reported to IPEDS (see Appendix C).

Descriptive Findings

First, retention practice data was analyzed to determine to what extent colleges have campus personnel assigned to coordinate retention efforts. Analysis found 29 out of 36 (80.6%) survey respondents reported there is a person on campus responsible for the coordination efforts. Disaggregated data based on institution location yields 14 out of 20 nonrural colleges have a retention coordinator (see Table 10). The majority of rural colleges (15 out of 16) have a person responsible for the coordination efforts. Next, disaggregated data based on institution size finds that two out of three of the NC community colleges with FTE 6500 or more have a person responsible for the coordination efforts; 13 out of 16 colleges with FTE 2500-6499 have a retention coordinator; and 14 out of 17 colleges with FTE 0-2499 have a person assigned to coordinate retention efforts (see Table 11). Table 12 provides summary data of retention coordinator position title. As indicated in the table, a vice-president (11 out of 29) or director (9 out of 29) is responsible for retention efforts at most schools. At other schools, a dean (6 out of

Table 10

Retention Coordinator by Location

Institution Classification	Yes	No
Rural	15	1
Non-rural	14	6

Table 11

Retention Coordinator by College Size

Institution Classification	Yes	No
FTE 0-2499	14	3
FTE 2500-6499	13	3
FTE 6500 or more	2	1

Table 12

Individual Responsible for Coordination of Retention Efforts

Title	Number of Colleges	Percent of Colleges
President	1	3.4
Vice President	11	37.9
Dean	6	20.7
Director	9	31.0
Counselor	2	6.9

29) or counselor (2 out of 29) is responsible for retention efforts. The president is responsible for coordinating retention efforts at only one of the 29 responding community colleges.

Next, survey data were analyzed to determine to what extent colleges have specific retention rate goals and timelines for completing stated goals. There is a specific retention rate goal at 20 out of 36 (55.6%) community colleges participating in the study. Many colleges (11 out of 26) have no retention goal; five participants did not answer the question (see Table 13). The median retention goal for the 20 colleges indicating a specified retention rate goal is 70.5%. Retention goals ranged from 50% to 100%, with a mode of 65%, as displayed in the Figure 3 stemplot. The mean retention rate goal is 72.9% with standard deviation 13.1%. Seven out of 20 respondents have no timeframe for achieving their retention goal; four colleges aim to achieve their target goal in two years; six schools have a set timeframe of three years; three colleges have a timeframe goal of three or more years (see Table 14).

Further, survey question four asked respondents to record current institutional first-year to second-year retention rates as reported to IPEDS. Figure 4 provides a stemplot display of reported rates. The mean retention rate is 57.8% with standard deviation 11.2%. The minimum and maximum student retention rates are 30% and 78%, respectively. The median retention rate reported by the 36 participating colleges is 58% and the mode is 57%.

Inferential Findings

Research hypothesis $H_0$2a states there are no effects of institution location, institution size, and early alert system use on student retention rates. A linear regression was conducted to determine if institution location, institution size, and early alert system affect student retention rates. At the .05 level of significance, there is insufficient evidence to reject null research hypothesis $H_0$2a ($F(4, 31) = .847$, $p = .506$, $R^2 = .099$) (see Table 15). Therefore, institution

Table 13

NC Community Colleges Retention Rate Goal

Retention Rate Goal	n	Percent of Colleges
Yes	20	55.6
No	11	30.6
No response	5	13.9

Figure 3. Stemplot of retention rate goals.

Table 14

Retention Rate Goal Timeframe

Timeframe	Number of Colleges	Percent of Colleges
None	7	35
1 year	0	0
2 years	4	20
3 years	6	30
More than 3 years	3	15

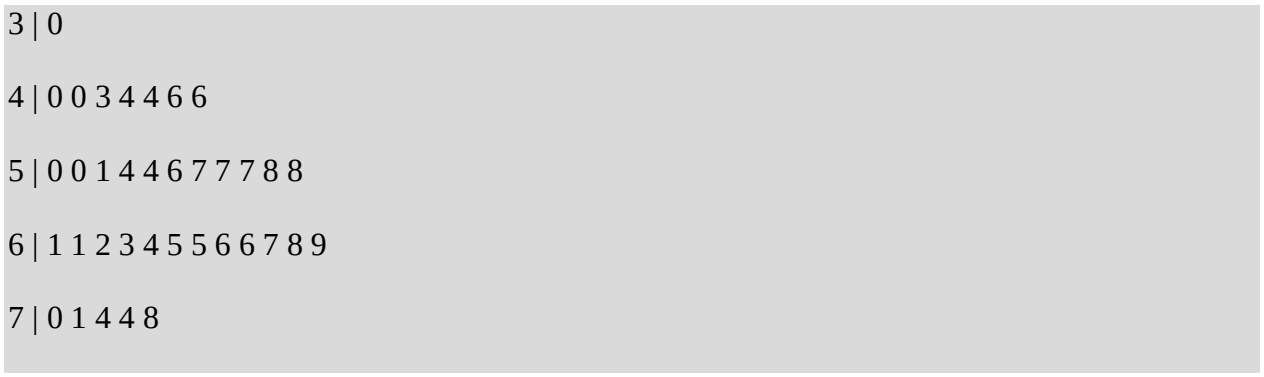

Figure 4. Stemplot of first-year to second-year retention rates.

Table 15

Linear Regression for Research Question 2

Coefficients[a]							
	Unstandardized		Standardized			95.0% Confidence Interval for B	
	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
(Constant)	55.642	6.143		9.058	.000	43.114	68.170
location	7.436	4.487	.334	1.657	.108	-1.716	16.588
alert use	-1.337	4.499	-.052	-.297	.768	-10.513	7.838
2500-6499 FTE	-.463	4.426	-.021	-.105	.917	-9.490	8.564
6500+ FTE	-1.740	7.901	-.044	-.220	.827	-17.854	14.373

Note. a. Dependent Variable: Retention rate.

location, institution size, and early alert system use on were not statistically significant predictors of student retention.

Research hypothesis $H_0$2b states there is no effect of institution location on student retention rates. Descriptive statistics yield a mean retention rate of 60.8% for the 20 nonrural NC community colleges with a standard deviation of 11.0%, and median of 64.5%. The minimum retention rate for nonrural colleges is 30% and the maximum is 74% (see Table 16). The mean and median are lower for the 16 rural colleges at 53.9% and 53.5%, respectively, and standard deviation 10.6%. The minimum retention rate for rural colleges is 40% and the maximum is 78%. Linear regression found no statistically significant evidence of individual effects of institution location on student retention rates (see Table 15).

Research hypothesis $H_0$2c states there is no effect of institution size on student retention rates. Descriptive statistics yield a mean of 56.2% for the 17 NC community colleges with FTE 0-2499, a standard deviation of 11.1%, and median retention rate of 57% (see Table 17). The minimum retention rate for FTE 0-2499 colleges is 30% and the maximum is 78%. The mean and median are 59.0% and 65%, respectively, for the 16 colleges with FTE 2500-6499 and standard deviation of 12.3%. The minimum retention rate for FTE 2500-6499 colleges is 40% and the maximum is 74%. The three colleges with FTE 6500 or more have a mean retention rate of 60%, a standard deviation of 5.3%, and median retention rate of 62%. The minimum retention rate for colleges with FTE 6500 or more is 54% and the maximum is 64%. Linear regression found no statistically significant evidence of individual effects of institution size on student retention rates (see Table 15).

Research hypothesis $H_0$2d states there is no effect of early alert system use on student retention rates. Descriptive statistics yield a mean of 57.8% for the 27 colleges using early

Table 16

Retention Rates by Location

Institution Classification	n	Mean	SD	Med	Min	Max
Nonrural	20	60.8%	11.0%	64.5%	30%	74%
Rural	16	53.9%	10.6%	53.5%	40%	78%

Table 17

Retention Rates by Institution Size

Institution Classification	n	Mean	SD	Med	Min	Max
FTE 0-2499	17	56.2%	11.1%	57%	30%	78%
FTE 2500-6499	16	59%	12.3%	65%	40%	74%
FTE 6500 or more	3	60%	5.3%	62%	54%	64%

Table 18

Retention Rates by Early Alert System Use

Early Alert System Use	n	Mean%	SD	Med	Min	Max
No	9	57.7%	12.8%	65.0%	30%	68%
Yes	27	57.8%	10.9%	57.0%	40%	78%

systems, a standard deviation of 10.9%, and median retention rate of 57% (see Table 18). The minimum retention rate for colleges using early alert systems is 40% and the maximum is 78%. In contrast, the nine NC community colleges not using early alert systems have a mean retention rate of 57.7%, a standard deviation of 12.8%, and median retention rate of 65.0%. The minimum retention rate for colleges not using early alert systems is 30% and the maximum is 68%. Boxplots of retention rates by early alert system use are provided in Figure 5. Linear regression found no statistically significant evidence of individual effects of early alert system use on student retention rates (see Table 15).

Research Question Three Findings

Research question three addresses the extent institution location, institution size, and type of early alert system affects early alert system contribution to student retention rates. Survey questions seven through 11 (see Appendix C) directly address types and detailed aspects of early alert systems used. Lastly, survey question 12 asked respondents to rate early alert system contribution to campus retention.

Descriptive Findings

First, data regarding types of early alert systems used was analyzed to determine how colleges are leveraging early alert systems in campus retention efforts. Analysis found two out of 27 colleges have an early alert tool that is entirely technology-based, such as a learning analytics platform that mines data to determine which students are at risk and subsequently guides intervention (see Table 19). Seven colleges have an early alert system that is entirely based on faculty, staff, and/or fellow students observing behavior and then notifying someone so outreach can occur, such as a faculty referral system. Most colleges (12 out 27) have an early alert system that combines elements of the first two choices. One responding college has another type of early

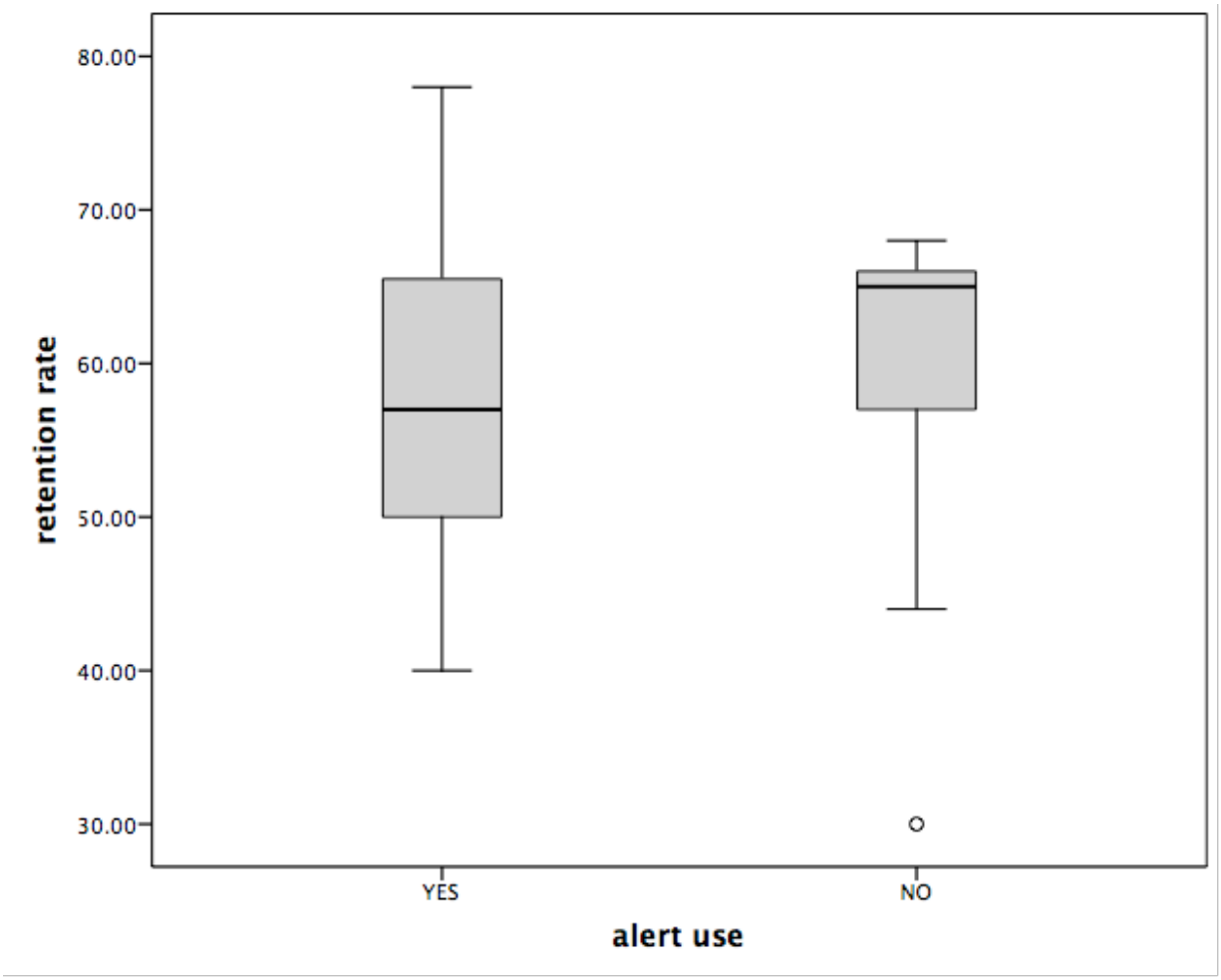

Figure 5. Boxplots of retention rates by Early Alert system use.

Table 19

Type of Early Alert System Used

Early Alert System Type	Number of Colleges
An early alert tool that is entirely technology-based (such as a learning analytics platform that mines data to determine which students are at risk and subsequently guides intervention)	2
An early alert system that is entirely based on faculty, staff, and/or fellow students observing behavior and then notifying someone so outreach can occur (such as a faculty referral system)	7
An early alert system that combines elements of the first two choices.	12
Other	
Not indicated	

alert system called *The Office Hour Initiative*, which is a faculty-driven system requiring office hours for at risk students.

Next, data were analyzed to determine students monitored by early alert systems, behavior triggering early alerts, and types of intervention. All students are monitored at 73% (n=22) of colleges; the remaining 37% of respondents indicated that only some students are monitored. Students in high failure rate courses and developmental courses, students on academic probation, and high-school students are the most frequently monitored (see Figure 6). Also, first year students and minority male students were included in survey comments under the other category. All 20 responding colleges indicated that frequent absences and failing grades trigger action in the early alert system (see Figure 7). Other early alert triggers include lack of participation (15 colleges), grades below a C (14 colleges), in-class behavioral indicators (11 colleges), and psycho-social skill assessment (2 colleges). Interventions include students being contacted phone or electronic means, informed about opportunities to seek assistance, contacted in person, and required by college employee to seek assistance, as displayed in Figure 8. Also, survey data was analyzed to determine employees participating in early alert systems. All survey respondents indicated that faculty are involved in early alert practices; academic advisors, academic support personnel, and counseling staff are also involved at most colleges (see Figure 9). Also, administrators are involved in early alert practices at 7 of the 20 colleges.

A college participating in the Carolina Works Initiative described in comments practices at their institution. Aviso software generates predictive analytics that are used to guide Success Coaches in proactive outreach to a pre-determined group of students, who may or may not be at one of 3 levels of risk of failure. Half of each incoming cohort of newly enrolled students is part of a treatment group and is assigned a Success Coach; the remaining 50% is a control group that

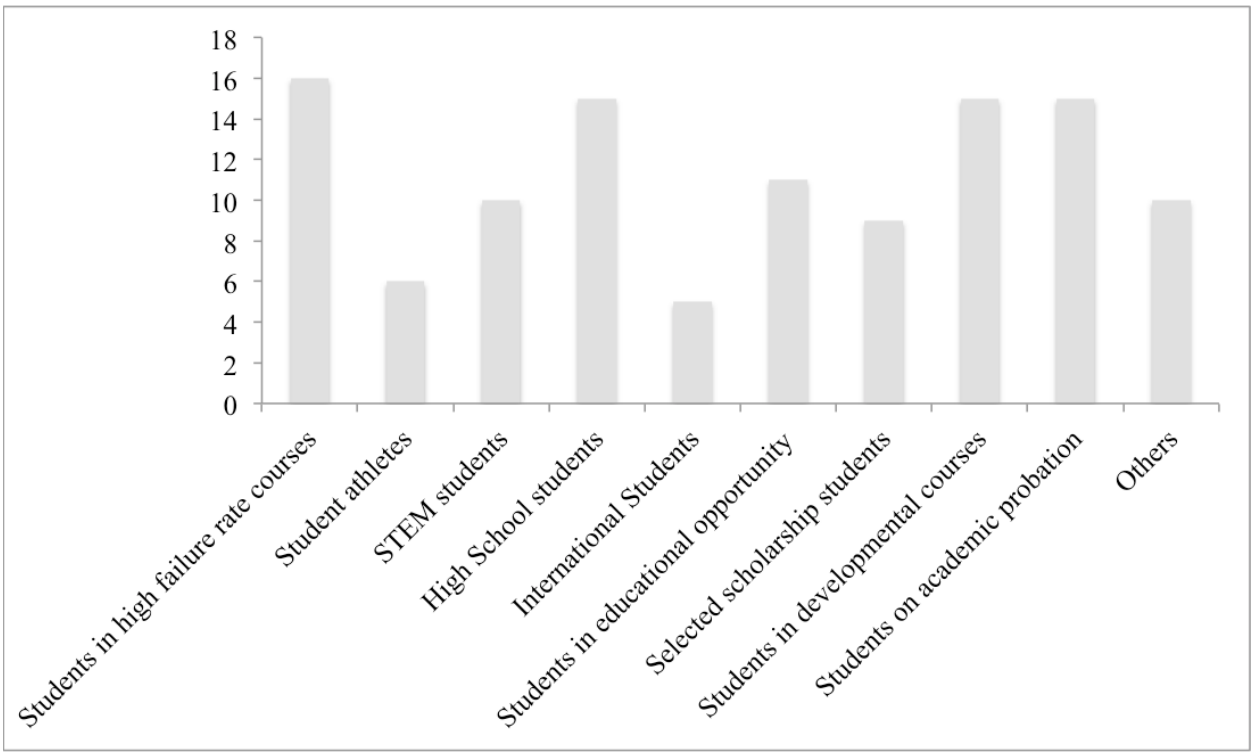

Figure 6. Students monitored by Early Alert.

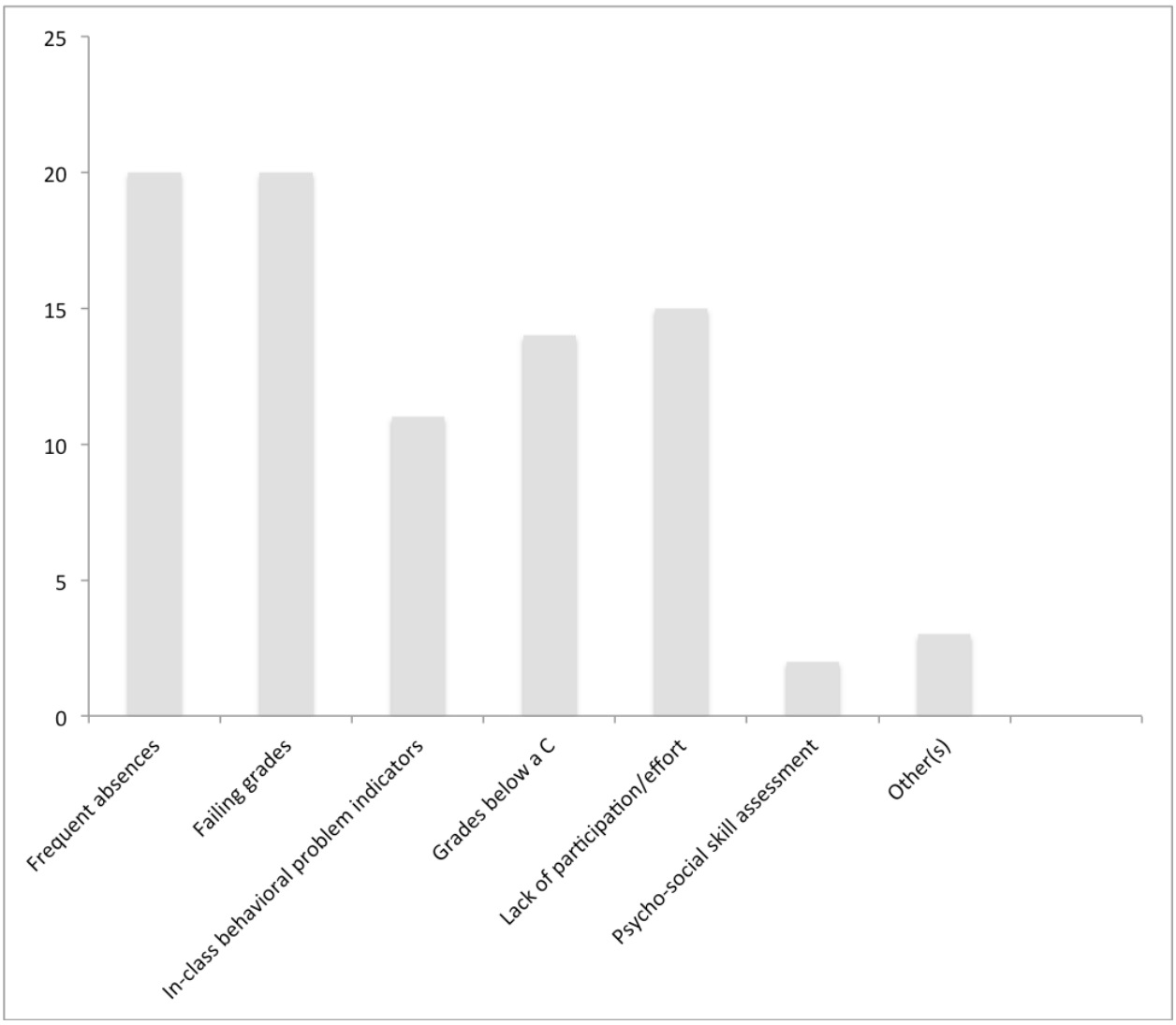

Figure 7. Type of behavior triggering action in the Early Alert system.

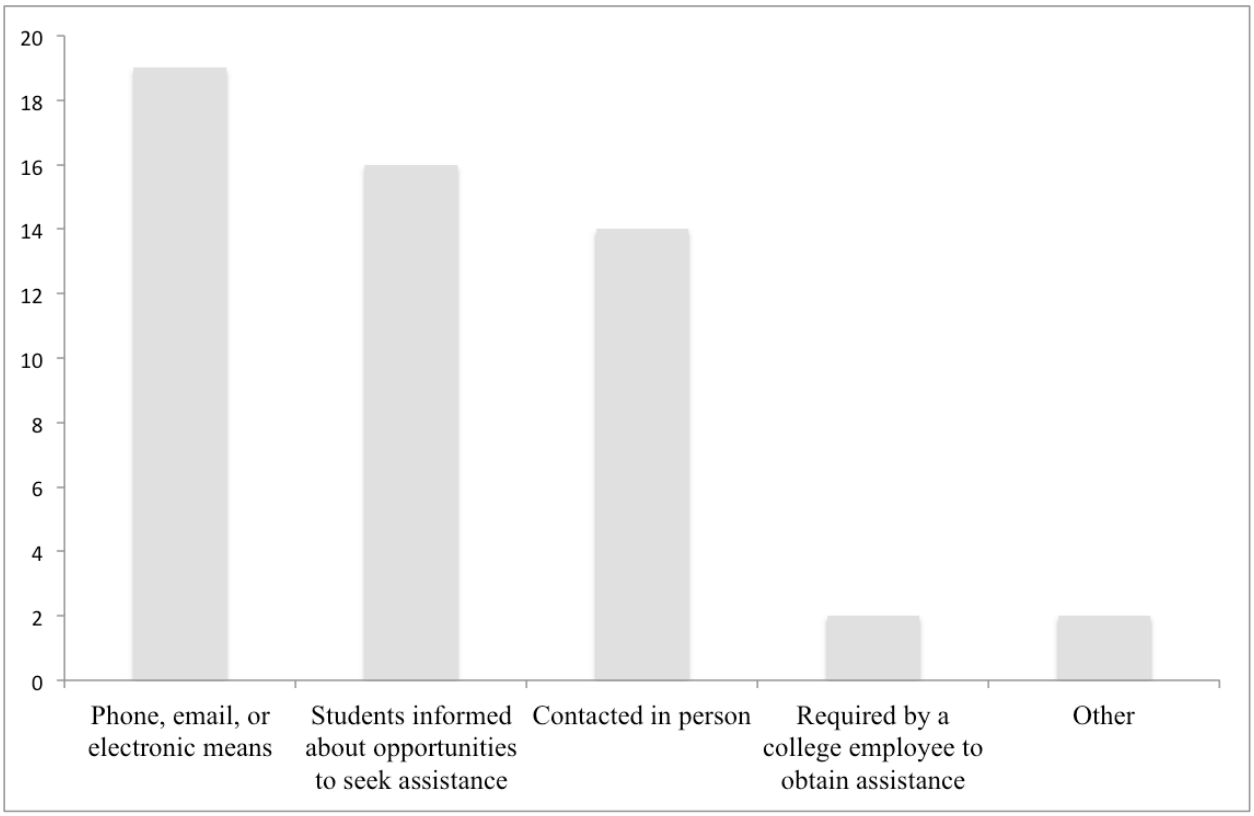

Figure 8. Type of intervention triggered by Early Alert system.

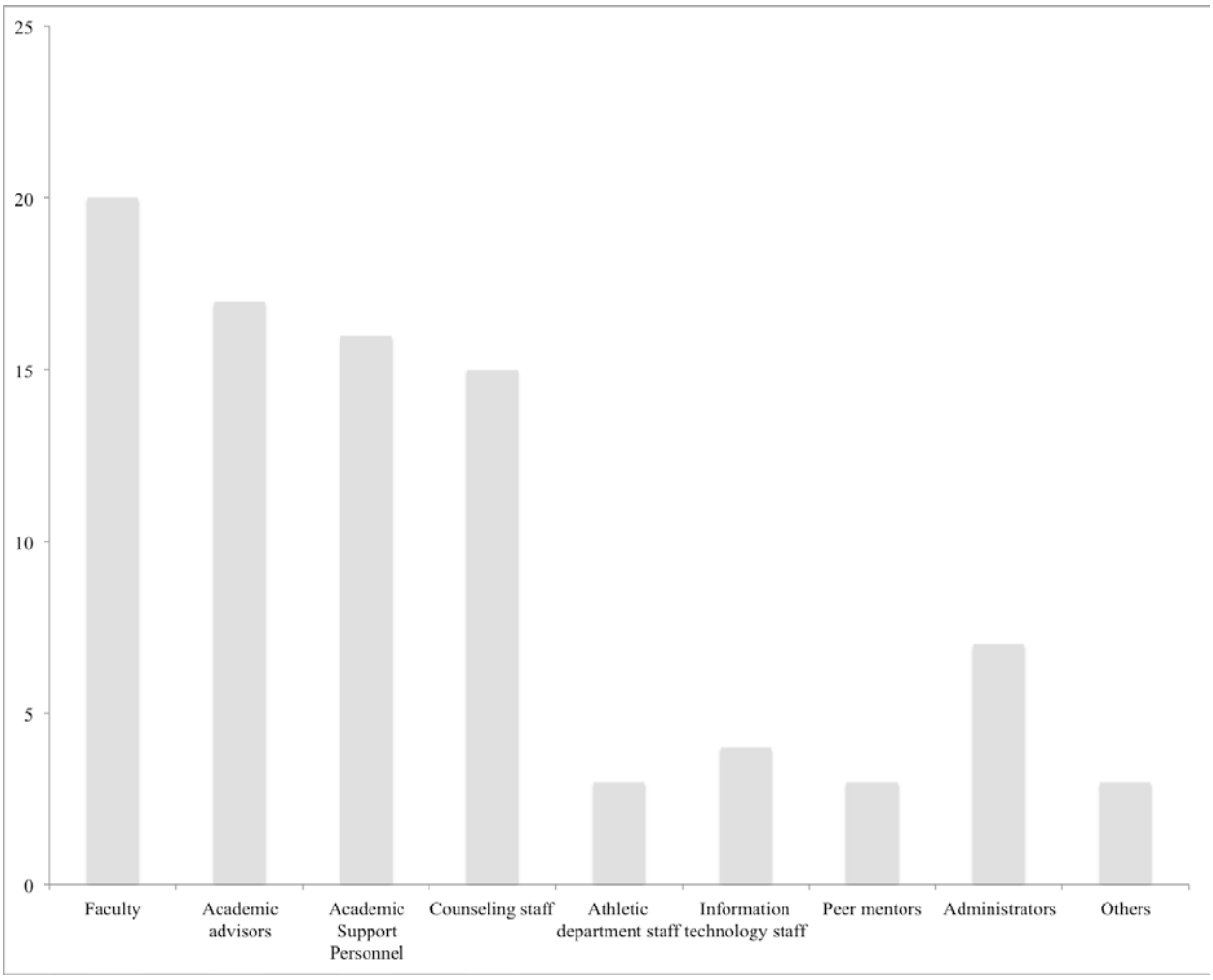

Figure 9. Employees participating in Early Alert systems.

continues on with traditional early alert monitoring. Students in the control group flagged in the early alert system receive an email from an early alert coordinator with details about the concern and information about campus resources. Alternatively, a student success coach contacts students in the treatment group who receive an early alert, either in person or electronically, to discuss the alert and provide support services and/or referrals as needed. The success coaches document the intervention and outcome in Aviso, which is accessible to all faculty and staff.

Survey question 12 asked respondents to rate early alert system contribution to campus retention. Ratings for the amount of early alert system contribution to retention range from 1 = little contribution to 5= major contribution. Two colleges (n=20) reported that early alert system use makes little contribution to campus retention; four colleges indicated contribution rating 2; 10 colleges indicated contribution rating 3; three colleges indicated contribution rating 5; one out of 20 respondents reported that early alert system use makes a major contribution to campus retention (see Table 20). The median and mode rating is three, meaning that colleges on average indicate early alert system use makes a moderate contribution to campus retention (see Figure 10).

Inferential Findings

Research hypothesis $H_0$3a states there are no effects of institution location and institution size on early alert system contribution to student retention rates. A linear regression was conducted to determine if institution location and institution size affect early alert system contribution to student retention rates. At the .05 level of significance, there is insufficient evidence to reject null research hypothesis $H_0$3a ($F(3, 16) = .352$, $p = .789$, $R^2 = .062$, $R^2_{Adjusted} = -.114$) (see Table 21). Therefore, there is not statistically significant evidence of effects of

Table 20

Early Alert System Contribution to Retention

Rating	Number of Colleges	Percent of Colleges
1	2	10.0
2	4	20.0
3	10	50.0
4	3	15.0
5	1	5.0

Note. Ratings (1 = little contribution; 5 = major contribution).

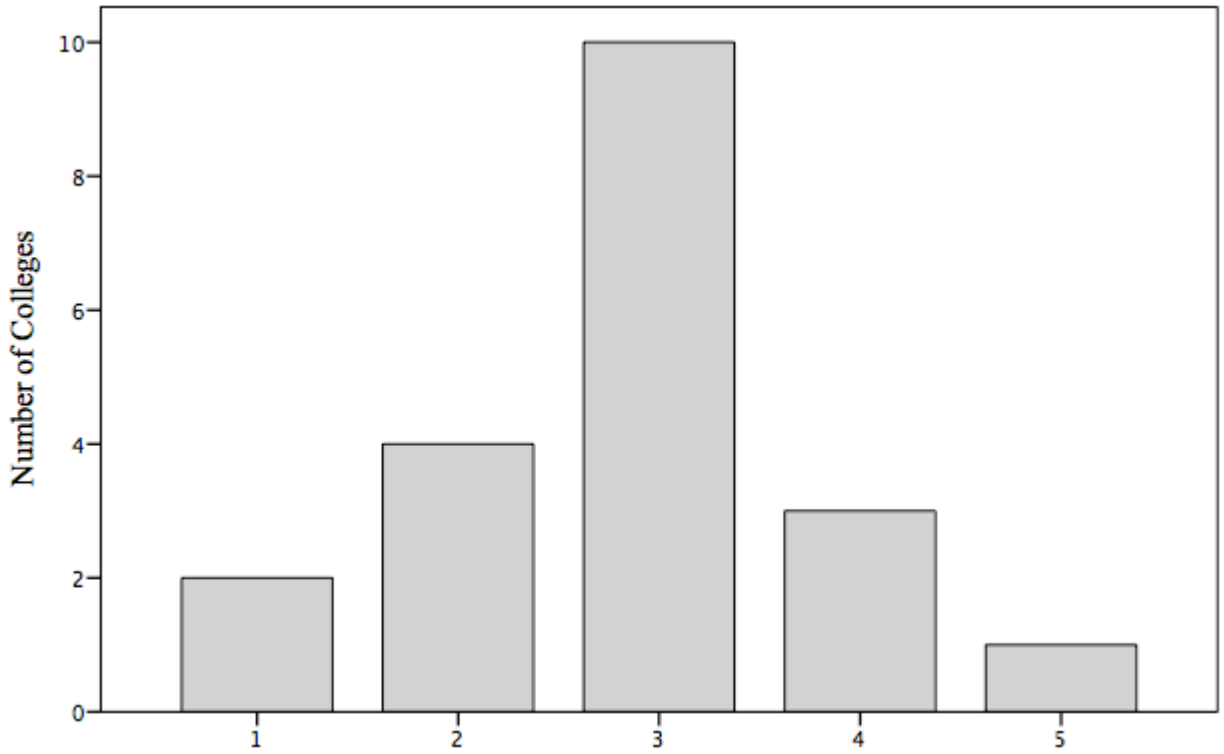

Figure 10. Amount of Early Alert system contribution to retention (1 = little contribution; 5= major contribution).

Table 21

Linear Regression for Research Hypothesis $H_0$3a

Coefficients[a]

	Unstandardized		Standardized			95.0% Confidence Interval for B	
	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
(Constant)	3.140	.580		5.413	.000	1.910	4.369
location	.004	.596	.002	.007	.994	-1.259	1.267
0-2499 FTE	-.504	.596	-.260	-.846	.410	-1.767	.759
6500+ FTE	-.144	.853	-.045	-.169	.868	-1.953	1.665

Note. a. Dependent Variable: early alert system contribution to retention.

institution location and institution size on early alert system contribution to student retention rates.

Research hypothesis $H_0$3b states there is no effect of type of early alert on early alert system contribution to student retention rates. A linear regression was conducted to determine if type of early alert affects early alert system contribution to student retention rates. At the .05 level of significance, there is insufficient evidence to reject null research hypothesis $H_0$3b ($F(3, 16) = .839$, $p = .492$, $R^2 = .136$, $R^2_{Adjusted} = -.026$) (see Table 22). Therefore, there is not statistically significant evidence of effects of type of early alert on early alert system contribution to student retention rates.

Research Question Four Findings

Research question four addresses to what extent early alert system effectiveness is monitored in North Carolina community colleges, both overall and by institution location and size classification. Early alert system effectiveness is defined to be the degree to which the early alert system is successful in producing desired institutional results. Survey question 13 addresses formal institutional research conducted to determine early alert system effectiveness (see Appendix C). Further, survey question 14 asks respondents to consider both cost and educational benefits to determine the level of cost-effectiveness for the early alert system.

Descriptive Findings

First, survey data was analyzed to determine to what extent colleges conduct formal qualitative or quantitative research to determine early alert system effectiveness. Analysis found 11 out of 20 (55%) institutions conduct formal research on early alert system effectiveness. As displayed in Figure 11, 10 out of 11 colleges indicated improved retention and graduation rates

Table 22

Linear Regression for Research Hypothesis $H_0 3b$

Coefficients[a]

	Unstandardized		Standardized			95.0% Confidence Interval for B	
	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound
(Constant)	3.500	.708		4.945	.000	2.000	5.000
referral	-.786	.802	-.389	-.979	.342	-2.487	.916
combined	-.800	.775	-.415	-1.032	.317	-2.444	.844
Other	.500	1.226	.113	.408	.689	-2.099	3.099

Note. a. Dependent Variable: early alert system contribution to student retention.

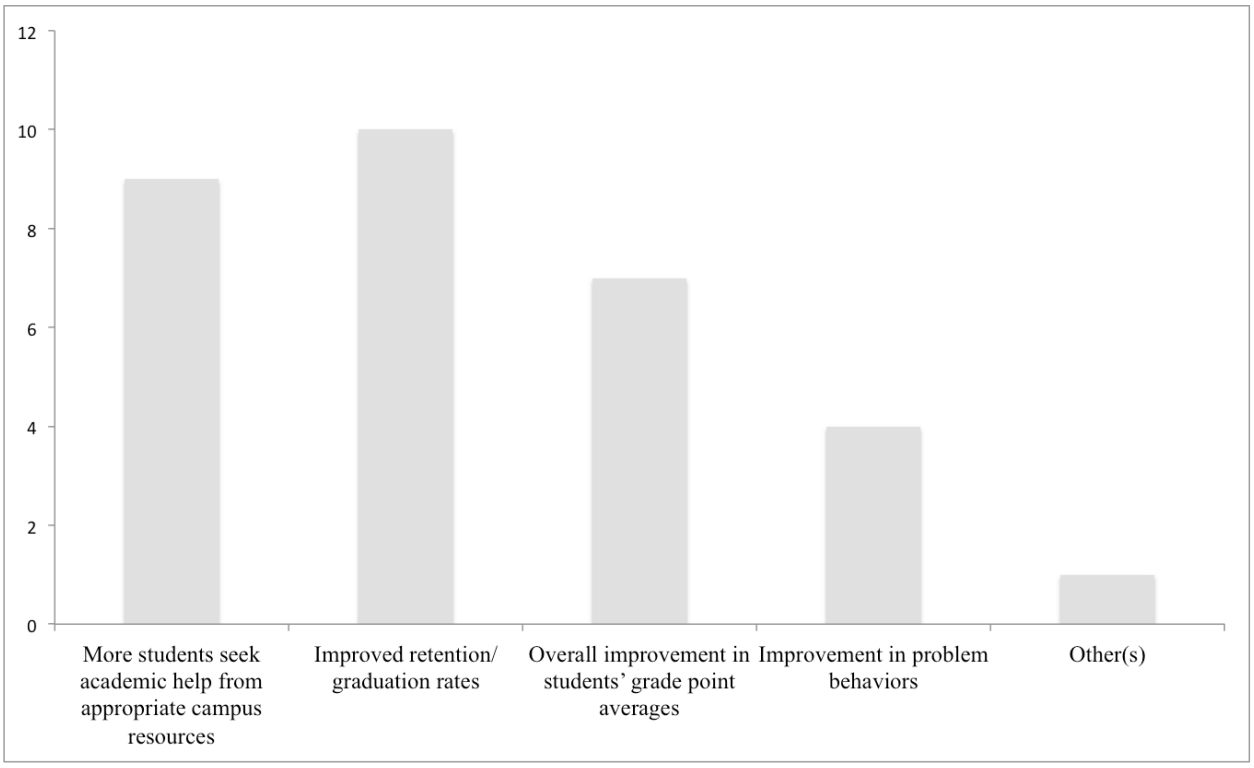

Figure 11. Early Alert system outcomes.

with early alert system use. Nine out of 11 colleges indicated more students seek academic help from appropriate campus resources; seven colleges indicated overall improvement in student grade point averages; and four colleges indicated an improvement in problem behaviors. A respondent commented:

> Our early alert program seeks to provide additional support for students who may not otherwise seek assistance. We have seen that just the act of reaching out to students can sometimes improve their performance, even if the student does not respond to the outreach. For example, a call from the early alert team regarding absences may result in the student gaining the knowledge of their at-risk status, and attending all remaining class meetings. This outside outreach shows the student that their effort is being noticed and monitored, leading to better outcomes overall.

One college recently implemented the early alert system, and therefore stated it is too early to determine effectiveness.

Next, data was analyzed regarding cost-effectiveness for the early alert system. Respondents rated early alert system cost-effectiveness based on 4 levels: high, medium, low, and do not know. Seven out of 20 colleges indicated a high early alert system cost-effectiveness; eight colleges indicated medium cost-effectiveness; two colleges rated early alert system cost-effectiveness low. Three of the 20 colleges indicated they do not know (see Figure 12).

Inferential Findings

Research hypothesis $H_0$4a states there is no significant relationship between early alert effectiveness monitoring and institution location classification. Five out of 11 nonrural colleges responding to the survey conduct formal qualitative or quantitative research to determine early alert system effectiveness (see Table 23). Six out of nine rural colleges conduct formal early alert

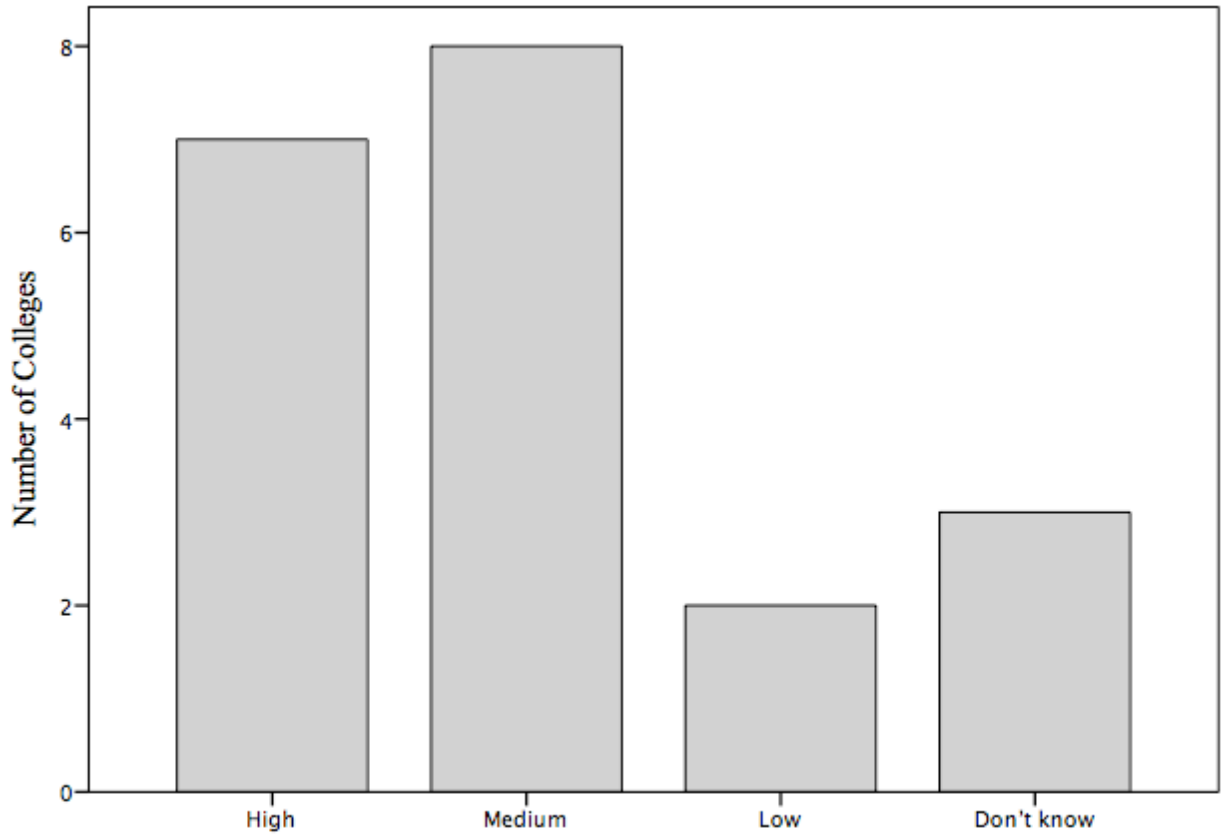

Figure 12. Early Alert system cost-effectiveness.

Table 23

Early Alert System Effectiveness Monitoring by Location

Early Alert System Effectiveness Monitoring	Rural	Nonrural
Yes	6	5
No	3	6

effectiveness research. A logistic regression was conducted to determine if institution location classification affects early alert effectiveness monitoring. At the .05 level of significance, there is insufficient evidence to reject null research hypothesis $H_0$4a ($\chi^2(1) = .910$, $p = .340$). Therefore, there is no evidence of significantly significant relationship between early alert effectiveness monitoring and institution location classification.

Research hypothesis $H_0$4b states there is no significant relationship between early alert effectiveness monitoring and institution size classification. Disaggregated data based on institution size finds that one of two responding colleges with FTE 6500 monitor early alert effectiveness; five out of seven colleges with FTE 2500-6499 monitor early alert effectiveness; and 5 out of eleven colleges with FTE 0-2499 monitor early alert effectiveness (see Table 24). A logistic regression was conducted to determine if institution size classification affects early alert effectiveness monitoring. At the .05 level of significance, there is insufficient evidence to reject null research hypothesis $H_0$4b ($\chi^2(2) = 1.219$, $p = .544$). Therefore, there is no evidence of statistically significant relationship between early alert effectiveness monitoring and institution size classification.

Summary

The purpose of this quantitative study was to examine early alert practices in North Carolina community colleges, delineate differences between rural and non-rural institutions and among different sized institutions, and determine the impact of early alert systems on student outcomes. This section reported descriptive and inferential findings from the survey addressing early alert practices in North Carolina community colleges. The next chapter includes a discussion of study findings and offers recommendations regarding early alert system use, effectiveness, and assessment in North Carolina community colleges.

Table 24

Early Alert System Effectiveness Monitoring by Institution Size

Early Alert System Effectiveness Monitoring	FTE 0-2499	FTE 2500-6499	FTE 6500 or more
Yes	5	5	1
No	6	2	1

CHAPTER 5: DISCUSSION AND CONCLUSION

This concluding chapter contains an analysis of study findings in light of existing literature and theoretical frameworks. Further, implications for community college early alert practices are discussed, and suggestions for future research are presented.

The purpose of this study was to examine early alert practices in North Carolina community colleges, delineate differences between rural and non-rural institutions and among different sized institutions, and determine the impact of early alert systems on student outcomes. In the current climate of heightened accountability and limited funding, early alert system cost is a barrier for many colleges. Retention is a top concern, but budgets are tight as enrollment is trending downward. Many community colleges lack the resources needed to implement an early alert system and provide sufficient support. Some schools receive grant money to fund early alert efforts, but sustainability is uncertain once the grant period ends. Institutional commitment and investment of fiscal and human resources is key to implementing student retention strategies. This study aimed to contribute to the overall body of knowledge concerning early alert system practices by answering the following research questions:

1. To what extent do North Carolina community colleges use early alert systems in student retention efforts, both overall and by institution location and institution size classifications?
2. To what extent do institution location, institution size, and early alert system use affect student retention rates?
3. To what extent do institution location, institution size, and type of early alert system affect early alert system contribution to student retention rates?

4. To what extent is early alert system effectiveness monitored in North Carolina community colleges, both overall and by institution location and size classification?

Discussion

Research Question One

Research question one addresses the extent of North Carolina community colleges early alert system use in student retention efforts, both overall and by institution location and institution size classifications. As Kuh (2006) points out, early alert systems are generally regarded as best practice in student retention efforts. The majority of community colleges surveyed (75%) have an early alert system in place. Tinto (2007) calls for institutions to go beyond recognizing that student retention can be improved and actually take action to design and implement effective retention strategies; North Carolina Community Colleges are rising to the challenge. Early alert implementation is evidence of institutional commitment to student success. Colleges with mature early alert systems can yield valuable insight into early alert system practices and effectiveness. Most colleges responding to the survey have alert systems three years or older, but over 40% of colleges have systems less than two years old. Although using early alert systems to improve student retention is not a new concept, early alert use is definitely trending upward. Five out of nine survey respondents with no early alert system are in the planning phase of early alert system implementation.

In the current climate of heightened accountability and limited funding, early alert system cost is a barrier for many colleges. Retention is a top concern, but budgets are tight as enrollment is trending downward. Many community colleges lack the resources needed to implement an early alert system and provide sufficient support. Some schools receive grant money to fund early alert efforts, but sustainability is uncertain once the grant period ends. Institutional

commitment and investment of fiscal and human resources is key to implementing student retention strategies.

Research indicated campus buy-in is a challenge. Faculty are crucial to early alert system success, and getting them on board can be difficult. Expensive technology is of limited value if faculty is not using it. One college is implementing a new integrated process and faculty training in an effort to improve outcomes. Student retention is a team effort that requires institutional members, faculty and staff, to work together toward the common goal of improving student outcomes (Tinto, 2007).

In prior studies it was found that institution size and location matters in student retention efforts (Biemiller, 2016). However, in the present research I found no statistically significant relationship between early alert use and institution location and size classification. Although rural community colleges typically have fewer resources than their nonrural counterparts, it does not hamper early alert use. Likewise, smaller schools with access to fewer resources than larger institutions manage to implement early alert systems. National research indicated smaller colleges are more likely than larger institutions to implement an early alert system (Koch et al., 2014), but this study found that almost as many mid-sized colleges and all large colleges use early alert.

Research Question Two

Research question two addresses the extent institution location, institution size, and early alert system use affects student retention rates. Student retention theorists contend institutional efforts can positively impact student educational decisions (Bean, 1980; Spady, 1970; Tierny, 1992; Tinto, 1975, 1993). It stands to reason early alert systems can make a difference in

retention rates. Improving student retention is a goal for many colleges, as evidenced by widespread use of early alert systems.

Although student retention is a stated priority for most institutions, retention practices vary widely. Surprisingly, nearly half of responding colleges do not have a specific retention rate goal or timeline for completing stated goals. The average retention rate goal for responding colleges is 70.5%, compared to the actual current average retention rate of 58%. First-year to second-year retention rates as reported to IPEDS varies among individual institutions and across institution size and location groups. The lowest reported student retention rate was 30% and the highest rate reported rate was 78%. Research found no statistically significant evidence of effects of institution location and institution size on student retention rates, however disparity is evident in raw data. Retention rates are higher at responding nonrural institutions (Mdn=64.5) than rural (Mdn= 53.5). Population data available in IPEDS actually reveals little difference in retention rates based on location; median NCCCS retention rates are 62% for rural versus 64% for nonrural institutions. Rural community colleges serve some of the most impoverished and underprepared students, yet there is little difference in retention rates between rural and nonrural institutions. However, there is difference in retention rates among institutions based on size. The average retention rate for FTE 2500-6499 colleges is markedly higher (Mdn=65) than both FTE 0-2499 (Mdn=57) colleges and colleges with FTE 6500 or more (Mdn=62); survey data is consistent population data available in IPEDS.

Intuitively, it seems reasonable to assume early alert systems are effective at improving student outcomes. The majority of research studies do in fact confirm early alert system effectiveness (Faulconer et al., 2014; Hudson 2006; Villano et al., 2018). However, some studies call early alert system efficacy into question (Brothen et al., 2003; Faulconer et al., 2014;

Hudson, 2006). This research study also finds no statistically significant effect of early alert system use on student retention rates. The average retention rate was actually higher for colleges not using early alert (Mdn=65) than for colleges that do have a system in place (Mdn=57). Conversely, it is worth noting that colleges with remarkably high retention rates do use an early alert system; the highest retention rate achieved for non-early alert users is 68% (see Figure 5). Ultimately, variation in the quality of early alert system practices makes it difficult to draw definitive conclusions about overall early alert efficacy.

Research Question Three

Research question three addresses the extent institution location, institution size, and type of early alert system affects early alert system contribution to student retention rates. Early alert system types vary across institutions and are unique to each college, and the amount of technology used and degree of human involvement differs. Most NCCCS colleges surveyed have an early alert system that combines a technology-based learning analytics platform with referral system to notify someone so outreach can occur. Previous national research (Koch et al., 2014) found smaller two-year colleges monitor all students whereas larger schools focus on a specific population, but this study found no such difference; all students are monitored at 73% of colleges. All responding colleges indicated that frequent absences and failing grades trigger action in the early alert system, however psychosocial skill assessment is a trigger at only two colleges. This could be an important omission since the psychological component (e.g., satisfaction, goal setting) is one of four major variables in the Bean and Metzner (1985) student retention model. Also, while nearly all schools contact students by phone or electronic means, 70% of colleges reach out in person. Faculty are deeply involved in retention efforts at all

institutions; strong faculty-student relationships connect students with the institution and can lead to improved retention (Astin, 1984; Pascarella & Terenzini, 1980; Upcraft et al., 2005).

Regardless of early alert type and processes specific to individual institutions, the common goal undergirding efforts is improved student retention. Survey colleges on average indicated early alert system use makes only a moderate contribution to campus retention. Just one out of 20 respondents reported that early alert system use makes a major contribution to campus retention. Given the drain of early alert system use on institutional resources, it stands to reason that survey institutions should consider making significant modifications to improve current early alert practices for the investment to be justified.

Research Question Four

Research question four addresses to what extent early alert system effectiveness is monitored in North Carolina community colleges, both overall and by institution location and size classification. For purposes of this study early alert system effectiveness is defined to be the degree to which the early alert system is successful in producing desired institutional results. This research study finds no statistically significant relationship between early alert effectiveness monitoring and institution location and size classification.

Tinto (2007) advocates for ongoing assessment of student retention efforts to justify resources and institutional commitment. Surprisingly, only 55% of responding colleges conduct formal qualitative or quantitative research to assess early alert system effectiveness. The rest of the colleges invest valuable resources into a tool that they do not fully evaluate for efficacy. This finding is consistent with national research study results (Koch et al., 2014) reporting that 33% of two-year colleges do not monitor early alert effectiveness.

Colleges that do collect and analyze early alert system data seek to justify student retention efforts and determine early alert efficacy. The overwhelming majority of colleges reported improved retention and graduation rates, more students seeking academic help from appropriate campus resources, and overall improvement in student grade point averages with early alert system use. Additionally, four colleges noted an improvement in problem behaviors. Collectively, these positive student outcomes support student retention theory assertions that providing supportive networks, such as early alert systems, for students can positively improve academic achievement, retention, and degree completion.

Early alert system cost can be a significant implementation obstacle. It follows that the expenditure should be rated high in cost-effectiveness to warrant investment of strained resources. Survey respondents rated early alert system cost-effectiveness based on 4 levels: high, medium, low, and do not know. The early alert system cost-effectiveness is high for 35% of responding colleges, compared to national research findings reporting 28% with high return on investment (Koch et al., 2014). Likewise, medium effectiveness ratings from this study (40%) are consistent with national findings of 43%. Low cost-effectiveness was reported by 10% of study colleges versus 16% nationally. Perhaps honing early alert system practices would lead to a higher return on investment.

Implications for Community Colleges

This study yields valuable insight into early alert best practices in community colleges. The following list provides useful tips for colleges aiming to improve student outcomes through early alert system use:

1. Enduring institutional commitment and sufficient investment of fiscal and human resources is of paramount importance in early alert system implementation.

2. Extensive research should guide decisions at every step of early alert system implementation. Formal research on early alert systems and best practices in student retention should inform actions. Also, studying early alert system practices at sister institutions is invaluable in forging a path forward.
3. The choice of early alert system type and how it will be implemented needs to be thoroughly vetted by a diverse group of stakeholders. Careful consideration of cost versus return on investment is important.
4. Technology is of limited value in improving student outcomes without adequate institutional support and infrastructure dedicated to student retention efforts.
5. Garnering buy-in from campus units involved in student retention efforts is an absolute must. Faculty involvement is key to early alert system success and getting them on board can be a challenge.
6. Campus personnel need to be educated and trained on student retention practices and early alert system use. Ongoing feedback, communication, and collaboration among stakeholders will promote shared governance.
7. Goal-setting is imperative to set benchmarks for achievement. Goals should be ambitious but realistic, carefully considering the target population and relevant institutional factors. An assessment and evaluation plan should accompany goals.
8. Ongoing formal quantitative and qualitative research on early alert system effectiveness is necessary to determine the degree to which the early alert system is successful in producing desired institutional results. Data should guide decisions to tweak early alert practices and make quality improvements over time.

Furthermore, this study revealed that some early alert systems are better than others in improving student outcomes. Putting an early alert system in place without careful deliberation may limit its impact and effectiveness.

Future Research Recommendations

This research helped fill a gap in the literature regarding the usage and impact of early alert systems in North Carolina community colleges. Descriptive and inferential findings provide practitioners with valuable information regarding early alert practices that may be useful in improving student outcomes. However, further research is needed to fully explore how institutions are leveraging early alert systems. Specifically, qualitative studies would add to the depth of knowledge and provide details about early alert systems not uncovered in this quantitative research study. For example, the survey revealed whether institutions are using early alert, but did not delve into specific characteristics of systems that would inform definitive conclusions about early alert system effectiveness. Further, this study found no statistically significant effect of early alert system use on student retention rates, but we know the extent to which early alert systems are used and embraced varies greatly; qualitative research may capture additional information not gleaned in this study to draw comprehensive conclusions. Also, case studies to follow institutions through the full selection and implementation process from start to finish may be beneficial as researchers and educators seek to more fully understand early alert. Finally, as systems mature with time, research will be needed to analyze data and draw conclusions as the early alert trend settles out. I concur with other researchers (Faulconer et al., 2014; Hudson, 2006) that further longitudinal studies are needed to confirm short-term studies regarding early alert system efficacy.

Conclusion

North Carolina community colleges are effectively responding to Tinto's (2007) call for institutions to transition from awareness to action to help students succeed. Early alert is a popular tool colleges are leveraging in an attempt to move the needle on student retention. This study confirms that early alert use is trending upward in NC community colleges, as most colleges either have an early alert system or are in the planning process. Early alert systems require dedication of institutional fiscal and human resources, which can be significant barriers. Cost is a major factor in early alert adoption and sustainability. Many colleges receive grants to implement early alert, but funding may be problematic once the grant period ends. Additionally, campus buy-in can be a major challenge. In particular, getting faculty on board is essential and crucial to early alert system success.

This study also sought to delineate differences between rural and non-rural institutions and among different sized institutions regarding student retention and early alert use. Study findings indicate institution location and size have no significant impact on early alert system adoption despite the fact that resources can be more limited at smaller and rural colleges. Further, there is little difference in retention rates based on institution location even though rural community colleges serve some of the most socioeconomically disadvantaged and academically underprepared students. However, there is difference in retention rates among institutions based on size; FTE 2,500-6,499 colleges have a considerably higher retention rate than other size classifications.

Additionally, this study explored early alert system effectiveness. Other research studies have called early alert efficacy into question. This study too found no statistically significant effect of early alert system use on student retention rates. However, the vast majority of colleges

report improved student outcomes with early alert use. It is also noteworthy that colleges with the highest retention rates have an early alert system in place. Surprisingly, many early alert users do not conduct formal qualitative or quantitative research to assess early alert system effectiveness. Most colleges that do research early alert outcomes reported medium cost-effectiveness. Further, colleges indicated early alert system use makes only a moderate contribution to campus retention. Due to newness of many early alert programs and variance in quality of early alert system practice, it is difficult to draw confident conclusions regarding early alert system effectiveness. Many early alert systems are fewer than two years old, leaving much to be researched in terms of implementation and effectiveness. It remains to be seen if early alert practices will stand the test of time.

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APPENDIX A: INSTITUTIONAL REVIEW BOARD APPROVAL LETTER

EAST CAROLINA UNIVERSITY
University & Medical Center Institutional Review Board
4N-64 Brody Medical Sciences Building· Mail Stop 682
600 Moye Boulevard · Greenville, NC 27834
Office **252-744-2914** · Fax **252-744-2284** ·
www.ecu.edu/ORIC/irb

Notification of Exempt Certification

From:	Social/Behavioral IRB
To:	Kimberly Mullis
CC:	
	David Siegel
Date:	9/19/2018
Re:	UMCIRB 18-001788 Early Alert Practices in North Carolina Community Colleges

I am pleased to inform you that your research submission has been certified as exempt on 9/19/2018. This study is eligible for Exempt Certification under category #2.

It is your responsibility to ensure that this research is conducted in the manner reported in your application and/or protocol, as well as being consistent with the ethical principles of the Belmont Report and your profession.

This research study does not require any additional interaction with the UMCIRB unless there are proposed changes to this study. Any change, prior to implementing that change, must be submitted to the UMCIRB for review and approval. The UMCIRB will determine if the change impacts the eligibility of the research for exempt status. If more substantive review is required, you will be notified within five business days.

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

APPENDIX B: PRE-SURVEY EMAIL

Date:

Dear Colleague,

I am a doctoral candidate in the Higher Education Leadership program at East Carolina University studying early alert system practices in North Carolina community colleges. I respectfully request your participation in a brief survey of early alert practices at your college. As college president, I know you are very busy and I truly appreciate you taking the time to help me with this project.

A survey link will be emailed to you separately through East Carolina University Qualtrics software. The survey is anonymous and will take 15 minutes or less to complete. A high response rate is needed for statistical inference, so your participation is very important. The data collected will provide helpful information to fellow community colleges regarding best practices in student retention.

If you have questions or would like a copy of research results please email me at mullisk99@students.ecu.edu.

Sincerely,

Kimberly J. Mullis
East Carolina University

APPENDIX C: SURVEY INSTRUMENT

Early Alert Practices in North Carolina Community Colleges

You are being invited to participate in a research study titled *"Early Alert Practices in North Carolina Community Colleges"* being conducted by Kimberly Mullis, a student at East Carolina University in the Department of Educational Leadership. The goal is to survey all 58 community colleges in the North Carolina Community College System. The survey will take approximately 15 minutes to complete. It is hoped that this information will assist us to better understand community college early alert practices. Your responses will be kept confidential and no data will be released or used with your identification attached. Your participation in the research is voluntary. You may choose not to answer any or all questions, and you may stop at any time. There is **no penalty for not taking part** in this research study. Please call Kimberly Mullis at (252)945-2503 for any research related questions or the Office of Research Integrity & Compliance (ORIC) at 252-744-2914 for questions about your rights as a research participant. Please select YES to participate in the study.

O YES

O NO

Institution location classification as determined by the U.S. Census Bureau and National Center for Education Statistics: **Core areas with populations of 50,000 or more are designated as urbanized areas; those with populations between 2,500 and 50,000 are designated as urban clusters. Rural areas are designated by the Census Bureau as those areas that do not lie inside an urbanized area or urban cluster*

O RURAL

O NONRURAL

Institution size classification based on total FTE, including both budget and non-budget FTE, as reported to the NCCCS office:

- O 0-2499 FTE
- O 2500-6499 FTE
- O 6500+ FTE

Is there a person on your campus who is responsible for the coordination of retention efforts?

- O YES
- O NO

What title most closely approximates that of the individual?

- O PRESIDENT
- O VICE PRESIDENT
- O DEAN
- O DIRECTOR
- O COUNSELOR
- O COORDINATOR

What is your institution's current first-year to second-year retention rate as reported to IPEDS?

0 10 20 30 40 50 60 70 80 90 100

%

Does your institution have a specific goal for its first-year to second-year retention rate?

O YES

O NO

What is the goal for the student retention rate? (% of students who will be retained – not percent increase)

0 10 20 30 40 50 60 70 80 90 100

%

Timeframe for achieving that goal:

- O NO SPECIFIC TIMEFRAME
- O 1 YEAR
- O 2 YEARS
- O 3 YEARS
- O MORE THAN 3 YEARS

Do you have an early alert system in place at your institution? **An early alert system is defined to be a formal, proactive feedback system though which students and student support personnel are alerted to early indication of at-risk behavior (e.g., low grades, poor attendance.)*

- O YES
- O NO

Are you in the planning process to implement an early alert system?

- O YES
- O NO

O What type of early alert system do you use?

O An early alert tool that is entirely technology-based (such as a learning analytics platform that mines data to determine which students are at risk and subsequently guides intervention)

O An early alert system that is entirely based on faculty, staff, and/or fellow students observing behavior and then notifying someone so outreach can occur (such as a faculty referral system)

O An early alert system that combines elements of the first two choices.

O Other

Describe the type of early alert system you use.

_____

How long has the early alert system been in place at your institution?

O 1 year or less

O 2 years

O 3 years

O 4 years

O more than 4 years

Which students are monitored by early alert?

- O ALL
- O SOME
- O NONE
- O DON'T KNOW

Which types of students are monitored? Check all that apply.

- ☐ Students in high failure rate courses
- ☐ Student athletes
- ☐ STEM students
- ☐ High School students
- ☐ International Students
- ☐ Students in educational opportunity programs (e.g., TRIO)
- ☐ Selected scholarship students
- ☐ Students in developmental courses
- ☐ Students on academic probation
- ☐ Others

Describe the types of students monitored by early alert.

_____

_____

_____

_____

_____

What type of intervention is triggered by the early alert system? Check all that apply.

- ☐ Students are contacted by phone, email, or electronic means
- ☐ Students are informed about opportunities to seek assistance
- ☐ Students are contacted in person
- ☐ Students are required by a college employee to obtain assistance
- ☐ Students families are notified (with student waiver of privacy rights)
- ☐ Don’t know
- ☐ Other

Describe intervention(s) triggered by the early alert system.

_____

_____

_____

_____

What types of behavior trigger action in the early alert system? Check all that apply.

- [ ] Frequent absences
- [ ] Failing grades
- [ ] Lack of participation/effort
- [ ] In-class behavioral problem indicators
- [ ] Grades below a C
- [ ] Psycho-social skill assessment
- [ ] Other(s)
- [ ] Don’t know

Describe types of behavior that trigger action in the early alert system

_____

_____

_____

_____

_____

Which employees at your college participate in the early alert system? Check all that apply.

- [ ] Faculty
- [ ] Academic advisors
- [ ] Academic Support Personnel
- [ ] Counseling staff
- [ ] Athletic department staff
- [ ] Information technology staff
- [ ] Peer mentors
- [ ] Administrators
- [ ] Others

Describe employees at your college that participate that in the early alert system.

_____

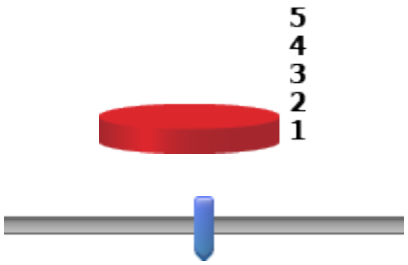
_____

_____

_____

_____

How much does the early alert system contribute to campus retention?
(1 = little contribution; 5= major contribution)



12345

Does your institution conduct formal qualitative or quantitative research to determine early alert system effectiveness? Early alert system effectiveness is defined to be the degree to which the early alert system is successful in producing desired institutional results.

O YES

O NO

Which of the following outcomes does the early alert system at your institution correlate with? Check all that apply.

- [ ] More students seek academic help from appropriate campus resources
- [ ] Improved retention/graduation rates
- [ ] Overall improvement in students' grade point averages
- [ ] Improvement in problem behaviors
- [ ] Other(s)
- [ ] None

Describe outcomes of the early alert system at your institution

_____

_____

_____

_____

_____

Considering both cost and educational benefits, what is the level of cost-effectiveness for the early alert system at your institution?

- O High
- O Medium
- O Low
- O Don't know

If you would like to share information or comments that would enlighten the understanding of retention problems and/or early alert systems solutions at your school, please write them in the space below.

_____

_____

_____

_____

_____

End of Block: Default Question Block
