A STUDY OF FACTORS CONTRIBUTING TO THE SUCCESS OF STUDENTS REPREATING COURSES

by

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ABSTRACT

This mixed methods study analyzed both the factors that cause students to repeat courses and the characteristics of students associated with success when attempting a class for the third and final time at a large community college system. The quantitative portion of this study analyzed five years of statewide data with 12,930 third attempts of a course by 10,431 students. The majority of third-attempt students (62.8%) received a C or better and 71.6% received a D or better. Commonly repeated courses were gateway courses such as English composition, math courses, and anatomy courses. Proportional analysis was used to compare third-attempt student success in each course to the average third-attempt success rate, and to the general student population success rate for each of the courses. Chi-square and binary regression analysis were used to compare student demographic characteristics of gender, race, Pell eligibility, and age against third-attempt success. All showed statistically significant but weak associations with success. Age showed the strongest association with success, with older students performing better. Linear regression showed a strong correlation between cumulative GPA and third-attempt success. The qualitative phase of this study analyzed 103 third-attempt appeal forms to determine common obstacles to and strategies for success in courses. This analysis was aligned with the Braxton, Hirshy, and McLendon model for student persistence in commuter colleges. Students who reported physical health, or mental health issues were less likely to be successful on their third attempt than the other students.

Key Words: course repeat, persistence, mathematics

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CHAPTER ONE: INTRODUCTION

INTRODUCTION

Since their inception in the early twentieth century, community colleges have served as vital institutions that provide education for a diverse student population, offering both technical programs and foundational undergraduate education to students who plan to transfer to four-year colleges (Nevarez & Wood, 2010). Today's community colleges serve 6.8 million students annually, making up one-third of all undergraduate students (National Center for Education (NCES), 2022). Community colleges offer open access and affordable higher education opportunities for students in their local communities (Bailey et al., 2015).

Community colleges provide college access to a disproportionate number of students who are underrepresented in higher education or who are from a lower socioeconomic status. In the fall of 2020, community colleges served 36% of all first-time college freshmen and 53% of all first-generation students. The fall 2020 cohort of community college students included 53% of all Black, 50% of all Hispanic, and 53% of all Native American college students (American Associations of Community Colleges (AACC), 2020). Since only 21% of Hispanic Americans and 29% of Black Americans hold an associate degree or higher compared to 46% of Whites, community colleges are an integral tool in closing the educational equity gap for these groups (National Center for Education Statistics (NCES), 2019).

As low-skill jobs become automated or are moved overseas, creating a skilled labor force is essential for economic prosperity. A study from the Georgetown University Center on

Education and the Workforce concluded that associate degrees and certificates provide a pathway to the middle class that is no longer accessible through industrial jobs. The Georgetown study found that workers with associate degrees or certificates in certain fields of study earned more than bachelor degree holders (Carnevale et al., 2020, p. 9). Large-scale, meta-analyses over several decades by Pascarella and Terenzini confirmed that postsecondary education leads to increased economic and career outcomes (Mayhew et al., 2016, p. 519). Data from the U.S. Bureau of Labor Statistics shows that the median income in 2020 for someone with an associate degree is 28% higher on average than for a person with just a high school diploma, and degree earners are less likely to be unemployed (Torpey, 2021). Whether a college offers technical programs, provides courses to upskill workers, or provides foundational courses to prepare students for transfer, community colleges play an essential role in workforce education by providing educational opportunities to a diverse population of students. However, the access and opportunities community colleges offer do not always lead to the successful completion of a degree or credential.

EMPHASIS ON COMPLETION

Since the 1990s, colleges have been under increasing pressure to raise college completion rates. The Student Right-to-Know and Campus Security Act of 1990 mandated colleges to provide extensive information to the Department of Education in order to receive federal financial aid funds (Bailey et al., 2015). This act led to the 1997-98 expansion of the Integrated Postsecondary Education System (IPEDS), which required colleges to report graduation rates. The initial release of graduation rates in 1999 showed that many community colleges graduated fewer than 20% of first-time, full-time students within three years of

starting a degree program and some colleges reported graduation rates in the single digits (Bailey et al., 2015). IPEDS data for community college students shows that completion rates of first-time, full-time students earning a degree after three years have increased since that initial report, but the data collected in 2023 shows that only 36.4% of the 2018 cohort of community college students graduated within three years (NCES, 2023).

In 2005, the Commission on the Future of Higher Education issued the Spellings Report offering recommendations aimed at improving access and success in higher education. Among the guidelines from this report were improving the preparation and persistence of students, addressing non-academic barriers such as cost, creating a culture of accountability, and embracing continuous innovation (Hillman, 2006). President Obama reiterated the importance of higher education in 2009 when his administration set a goal to have 60% of 25-to-34-year-olds complete at least an associate degree by 2020 (The White House, 2009). Currently, the United States is falling short of the Obama Administration's 2020 goals. According to the Organization for Economic Cooperation and Development (OECD), only 52% of the United States population 25 to 34 years old had earned a postsecondary degree. The U.S. ranks eleventh in the percentage of adults with a higher education degree out of the 38 OECD countries (OECD, 2021). The shortfalls in degree attainment are not due solely to access issues. The National Student Clearinghouse Research Center reports that, as of 2021, there are 40.4 million people with some college but no degree (Causey et al., 2023). The high number of college students who do not finish their degrees or certificates raises concerns about the underlying causes of this failure. In its 2012 report, *Reclaiming the American Dream*, the 21st-Century Commission on the Future of Community Colleges called for a change in community

college focus from access to success and to change to a culture of evidence over anecdotes (AACC, 2012, p. 14).

The scrutiny of college completion rates is compounded by the concerns over the cost of higher education and whether the return on investment is worthwhile. The federal government spent more than $145 billion on higher education in 2018, with the majority of that money ($98 billion) going directly to students in the form of financial aid (Bureau of the Fiscal Service, 2019). Since the 1997-98 expansion of IPEDS, there have been several additions to the data collection requirements higher education institutions must complete to receive federal financial aid funds. In 2002, the Education Sciences Reform Act established the Institute of Education Sciences and reauthorized the National Center for Education Statistics to collect and disseminate data on higher education (Aliyeva et al., 2018, p.37). In 2010, IPEDS started requiring the collection of data on program enrollment and completion by colleges (Aliyeva et al., 2018, p.38).

State and local funding for all higher education totaled $113.2 billion in the fiscal year 2021, including $3.7 billion in federal stimulus funding (Laderman & Heckert, 2021). However, Honeyman et al. (2015) describe a dramatic shift in the cost of higher education from the late 1970s through the 2000s from state and local sources to the student (Honeyman et al., 2015, p. 23). The State Higher Education Executive Officers Association (SHEEO) reports that the average state budget allocation for higher education has fallen from 8.7% in 1980 to 5.7% in 2020 (Laderman & Kunkle, 2022). SHEEO further notes that the student share of higher education costs increased from 20.9% in 1980 to 28.9% in 2001. By 2022, the U.S. average student share was 41.7% (Laderman & Kunkle, 2022). Much of the cost-cutting measures by states have been

through the use of performance funding. Between 1979 and 2007, 26 states enacted performance funding for community colleges or universities (Cohen, Brawer, Kisker, 2014, p. 158). As of 2020, 41 states now tie at least part of their college funding to some type of performance metric based on the completion of degrees or certificates (Whitford, 2020). Bailey, Jaggars, and Jenkins (2015) identify the increasing cost of college for students and the increased need for a college degree in a technology economy as factors that contribute to the accountability measures colleges face today. Community colleges are especially impacted by these policies since they are open access and serve more underprepared students than their four-year counterparts. Community colleges also depend more on federal, state, and local government funding since they have less access to alternative revenue streams such as research and donors (Bailey et al., 2015, pp. 5-8). Therefore, community colleges must determine what policies, resources, and interventions are most effective in increasing completion rates.

FEDERAL FINANCIAL AID

The 1965 Higher Education Act established federal grants and loans for all individuals who wanted to pursue postsecondary education. Of all community college students taking courses for credit 43% receive some form of federal aid (Mullin et al., 2015, p. 78). For the 2018-19 school year, 78% of first-time full-time degree-seeking students at community colleges received financial aid (Zhang et al., 2021, p. 25).

Students who receive Pell Grants through Federal Financial Aid do not have to repay the funds, as long as they meet certain criteria. Pell Grant awards are determined by Expected Family Contributions to the cost of the education, based on student FAFSA submissions. The

expected contributions are determined by annual family income, household size, and number of dependents, or whether the student is considered a dependent (U.S. Department of Education, 2020). About one-third of undergraduate students receive a Pell Grant, and 51% of grants go to families earning less than $20,000 annually (Hanson, 2023). In the 2021-22 school year, 23% of Pell Grants went to public Community Colleges (The Association of Community College Trustees (ACCT), 2023).

Because federal financial aid is such a large component of community college funding, the policies that the Department of Education sets often influence state and college policies.

COURSE REPETITION POLICIES

Since July of 2011, the Federal Department of Education has worked to improve the on-time completion of college for students by limiting funds for repeated coursework. According to Title 34 CFR Section 668.2(b): Students are eligible to receive Federal Financial Aid for repeat coursework under these circumstances:

- Students may use eligible federal financial aid to repeat a failed course until it is passed.
- Students may receive aid to repeat a previously passed course (with a D or better) one additional time. Federal financial aid cannot be applied for any previously passed course that has been repeated more than once.
- Students will not receive aid to repeat a previously passed course due only to a student's failure to pass other coursework, even if retaking the previously passed course is required as part of retaking the other failed courses.

While students can receive federal financial aid to repeat courses under the conditions above, federal aid will only cover courses up to 150% of the credit hours required to complete a degree. All attempted hours associated with repeated coursework (original and repeated

attempts) are included in this maximum timeframe calculation (Office of Postsecondary Education, Department of Education, 2023).

The above policies only impact a student's ability to receive aid for repeated courses and do not prohibit colleges from setting additional policies on course repetition. To keep students from exceeding their financial aid maximum timeframe, many colleges and some states have implemented policies that either limit how many times students are allowed to retake a course or require students to pay out of pocket for additional course attempts beyond a second or third attempt. A 2002 survey of the Association of Collegiate Registrars and Admissions Officers (AACRAO) showed that only 4% of institutions did not allow course repeats (Adelman, 2006, p. 74). The 2015 survey of AACRAO members found that the percentage of institutions that allowed only one repetition per course for undergraduate students had increased to 26.4%. The survey also found that 22.1% of institutions required students to get permission for course repetitions (Kilgore, 2015, p. 2). In 2016, Florida's Department of Education set a limit of three attempts per college course with allowances for a fourth on appeal (Florida Department of State, 2016). Starting in 2013, California began limiting students to three attempts in any state college district on certain courses and provided guidelines for how course repetitions are recorded on transcripts (Carroll, 2013). The 2021 Texas Legislature eliminated state funding for higher education courses that are attempted three or more times and allows colleges to charge a higher rate for repeated courses under certain conditions (Tex. Legis. Assemb., 2021). These federal and state regulations may influence other states and colleges as they consider updates on their legislation and policies surrounding third attempts.

Making informed decisions on such policies requires continuous research and reflection by these institutions.

STATEMENT OF THE PROBLEM

Less than one-third of community college students complete a degree within three years (NCES, 2022). Students cannot complete a degree without successfully passing key courses. Ivy Tech Community College limits students to three attempts on any given course. Ivy Tech is a large community college system in Indiana and serves over 100,000 students per year at campuses throughout the state. The college awards both transfer and terminal degrees as well as a variety of certificates. The ramifications for students who fail to complete a course on a third attempt can be immense.

The inability to complete gateway and other key courses may result in students leaving a program, leaving the college, or dropping out of higher education completely. Failing to complete a degree or spending extra time to complete a degree can be costly for students. In addition to the costs associated with taking courses, students may miss opportunities for gainful employment while they invest time in higher education, and students who fail to complete a degree will have lower earning potential, on average. When students stop out or drop out the college loses tuition and fee revenue, performance funding from the state, and incurs the cost of returning financial aid funds to the federal government. Finding ways to help students succeed at the course level is essential to helping students complete their degrees and academic goals.

OVERVIEW TO THE STUDY

Purpose of the Study

This study seeks to analyze both the factors that cause students to repeat courses and the characteristics of students associated with success when attempting a class for the third time. This study will provide information about the prevalence of students taking a third attempt of a course at Ivy Tech Community College and the outcomes for students on their third attempt. This study will determine which classes are most likely to be repeated and will use statistical analysis to compare success rates for third-attempt students and the general student population. The researcher believes that the third-attempt data will follow patterns that are similar to national community college completion data, with lower success rates for minority and low socio-economic status students.

Ivy Tech's current course repeat policy is to allow students a second attempt of a course for any reason with no restrictions, but a third attempt requires students to seek permission from the campus vice chancellor of academic affairs by working with an advisor to submit an appeal form. Students are not allowed to retake courses after a third attempt except for very rare circumstances. The appeal application form to take a course for the third time requires students to explain why they were not successful on the first two attempts and what they will do to be successful on their third attempt (see Appendix A). In addition to a large-scale quantitative analysis, this study will analyze the third-attempt appeal forms to determine the common issues students cite for failing to complete courses in previous attempts and the strategies they report they will utilize on their third attempt. The student responses will also be compared with their third-attempt course outcomes. The researcher believes that students will

list multiple challenges to success including academic, external, and issues due to college policies.

Understanding the scale of the issue and the underlying factors that contribute to student success or failure at the course level can help Ivy Tech and similar institutions develop policies and interventions that will support more students in successfully completing courses, and ultimately, degrees and certifications.

Research Questions

Ivy Tech has not undertaken a comprehensive study of students repeating a course for the third time. This study seeks to answer the following research questions.

1. How successful are students on the third attempt of a course?
2. What are the most commonly repeated courses and how do students perform on their third attempt?
3. What are the characteristics of third-attempt students and how are these characteristics associated with student success on their third attempt of a course?
4. What do students identify as the most common obstacles to successful course completion, and how do these obstacles impact success on their third attempt?
5. What resources are most helpful to students repeating a course for the third time?

Research Context: Ivy Tech Community College

Phase One: Statewide Institutional Context

Phase One of this study reviewed five years of statewide institutional data from all Ivy Tech campuses for students who have repeated a course for the third time. Ivy Tech Community College has 20 campuses and 43 locations across the state of Indiana. Ivy Tech is the largest singly accredited community college in the United States, serving over 148,000

students in the 2020-21 school year with an FTE of around 50,000 students (Ivy Tech, 2023a). The college offers 75 academic programs, including transfer degrees, terminal degrees, certifications, certificates, and skills training. Ivy Tech produces the highest number of associate-level nurses in the United States. The Indiana College Core certification allows Ivy Tech students to transfer the first year of core courses to any of Indiana's Public colleges. There are 15 articulated *Transfer as a Junior* degrees that ensure credits earned at the community college level in Indiana will be applied to degree completion at Indiana's four-year colleges (ICHE, 2023). Ivy Tech also offers various terminal degrees and certificates in areas like healthcare, automotive, HVAC, and informatics (Ivy Tech Programs, 2023b). The first goal listed in Ivy Tech's Strategic Plan is to "Ensure every student persists towards their educational objective," and part of the college's core values is to "Commit to the discovery of insight and understanding through research, analysis, and measures as we advance educational attainment" (Ivy Tech Strategic Plan, 2022b, p. 6).

Ivy Tech student demographics are as follows: 40% are first-generation college students, and 25% are students of color (Ivy Tech, 2023a); 43% of Ivy Tech's first-time degree-seeking students were Pell-eligible in the Fall 2019 cohort (Indiana CHE, 2022); and Ivy Tech's 150% graduation rate for the Fall 2017 cohort was 28% (NCES, 2022a). While this figure is a significant improvement from a 9% rate for the fall 2007 cohort, Ivy Tech's 150% graduation rates are below the national average of 36.4% (Ivy Tech, 2011; NCES, 2023). According to Indiana's Commission for Higher Education (ICHE), 43% of Indiana citizens have an education beyond high school (Indiana CHE, 2020);however, there are 350,000 adults in Indiana who have started college but have no degree (Indiana CHE, 2022).

Ivy Tech's primary sources of revenue are student tuition and fees and appropriations from the state of Indiana (Ivy Tech, 2020). Indiana's performance funding model began rewarding on-time degree completion in 2007. Indiana has since created additional performance metrics for certifications and smaller awards when students complete 15, 30, and 45 credit hours (Indiana CHE, 2017). Bonus amounts are awarded when Pell-eligible students complete a degree. Ivy Tech and the state of Indiana have a vision for the college to award 50,000 certifications, certificates, and degrees per year (Ivy Tech, 2022b).

According to Ivy Tech's Academic Policies and Procedures, students may repeat a course one time. In cases of extenuating circumstances, students may attempt a course for a third time only with the approval of the Campus Academic Officer or designee. Withdrawals after the census date, which occurs at the one-eighth point of the course, count as an attempt (Ivy Tech, 2023c, ASOM 3.02).

To meet Ivy Tech graduation requirements for degrees and certificates, students must earn a minimum GPA of 2.0. Some programs, such as nursing, have program accreditation standards requiring a C or better in certain courses (Ivy Tech, 2023c, ASOM 4.25).

Ivy Tech students who receive Title IV federal financial aid must maintain a minimum grade point average of 2.0, maintain a successful completion rate of 67% of the courses in which they enroll, complete their program of study within a reasonable period of time, and not exceed the maximum time frame of 150% of the total credit hours required by their program (Ivy Tech, 2023d).

Phase Two: Regional Institutional Context

Phase Two of this study focused on students in the Lafayette region of Indiana. Ivy Tech Lafayette served 10,455 students with an FTE of 2,966 in the 2020-21 academic year (Ivy Tech Lafayette, 2023). Lafayette, Indiana, is in a rural industrial area with a major four-year university nearby. In addition to the main Lafayette campus, Ivy Tech Lafayette supports two satellite locations in counties that are within a 35-mile radius of Lafayette. Ivy Tech Lafayette currently offers 43 programs that include certificates, associate degrees, and articulated transfer degree options. The campus also provides high school dual credit support for nine surrounding counties. However, this research study includes only data from non-dual-credit students.

Theoretical Framework

The desire to increase college completion rates has led to a large body of literature on student retention and persistence issues. The National Center for Education Statistics explains the difference between the measures of retention and persistence in that retention puts the onus on the institution and persistence puts the onus on the student (Seidman et al., 2012, p. 88).

Tinto's work on student departure is widely cited in higher education research. Tinto's 1993 Model of Student Departure is a longitudinal model that acknowledges students' pre-college characteristics such as family background, prior schooling, and individual skills and abilities. The crux of Tinto's theories lies in the academic and social integration that students experience after entering college (Seidman et al., 2012). Academic integration refers to the alignment of the student's academic goals and their perception of the college's ability to support their fulfillment (Schreiner et al., 2012). The social integration aspect refers to the

relationships that students build with compatible friends and social connections that can provide academic support. Research confirms that students who feel a sense of belonging are more likely to persist (Schreiner et al., 2012). Tinto's model also acknowledges that students' ability to integrate academically and socially are impacted by external factors such as family and work commitments. Overall, Tinto attributes student departure to three key causes: academic difficulties, failure to achieve academic integration; and failure or inability to achieve social integration (Folsom et al., 2015).

Tinto's Theory of Departure was primarily based on the experiences of students at four-year residential colleges. Tinto himself acknowledges that different groups of students will require different retention policies and programs (Habley, 2012). As a report by Public Agenda (2017) notes, "The traditional college experience is disappearing as more and more students are older, attending part-time, commuting, caring for children or other family, and working one or more jobs" (Rissolo, Allison, 2017, para. 1). After testing Tinto's theory using empirical methods, Braxton, Hirshy, and McLendon's research resulted in the development of two models for persistence; one for traditional college students and one for commuter college students (Braxton, 2013). Similar to Tinto's model, the Braxton, Hirshy, and McLendon models are longitudinal and consider student entry characteristics. However, their model for commuter college students focuses less on students' social integration and more on external factors. The Braxton, Hirshy, and McLendon model for student persistence in commuter colleges divides student persistence factors into student entry characteristics, the external environment, and organizational characteristics.

The foundational work in persistence theories done by Tinto and his contemporaries laid the groundwork for understanding student departure, but the Braxton, Hirshy, and McLendon model provides a structure with categories that are more in line with the issues that today's community college students face in completing a degree. This study will utilize the Braxton, Hirshy, and McLendon model as a framework for categorizing the factors of success and failure in the third attempt of a course.

Research Methods

This study utilized a mixed methods approach. According to Creswell (2021), blending statistics, personal stories, and experiences enriches research, leading to a deeper grasp of the issues (Creswell, 2021). In this study, the quantitative data provided important information about student success trends based on fixed and measurable attributes like course topics and demographic factors. The qualitative portion of the research sought to understand the underlying challenges that students faced during previous attempts of a course from their perspectives. This study is specific to Ivy Tech Community College students and policies, limiting its applicability to other institutions.

Phase One quantitatively analyzed five years of Ivy Tech's statewide data to provide an unbiased look at the proportion of students who successfully completed a course on the third attempt, as well as student success rates by course. The Phase One data represents the total population of third-attempt students and consisted of results from 12,930 third attempts of a course by 10,431 students. Phase One used quantitative methods to compare student success rates based on the demographic factors of gender, age, race, and Pell eligibility. The Phase One data also provided information about which courses were the most commonly repeated and

the success rates in those courses. Statistical analysis was used to compare third-attempt student success rates between courses and to the general population of students.

Phase Two considered the underlying reasons students have not been successful in initial course attempts and what steps they take to be successful on their third attempt. Thematic analysis was applied to 103 Ivy Tech Lafayette third-attempt appeal forms to determine patterns in common obstacles that students face in course completion. Because the researcher believed that third-attempt student challenges would be comparable to persistence challenges facing community college students, this analysis was aligned with the Braxton, Hirshy, and McLendon model for student persistence in commuter colleges (Braxton et al., 2004). The student success rates were calculated for each of the common factors from this analysis to study the relationships between student issues on previous attempts and success on their third attempt of the course. The reliability of the Phase Two analysis results may be limited because it relies on student narratives and the researcher's interpretation of these narratives.

Significance of the Study

A limited number of studies have examined college students who repeat courses. Adelman (2006) used Department of Education data on a cohort of students to broadly consider the issue of timely college completion and found that excessive course withdrawal and repetition reduced the probability of completing a bachelor's degree on time by 50% (Adelman, 2006). A large University of Buffalo study on the impact of course repetition and time to degree showed the scope of student withdrawal and course repetition and which students were most impacted (Vanzile-Tamsen, 2011). A small 2013 Canadian study of first-year business students

considered how quantitative variables such as age and GPA impacted student success in a course being retaken (Armstrong & Biktimirov, 2013). In North Carolina, a multi-institution study on course repetition and institutional policy in nursing programs sought to understand the scope and policies on course repetition (Lewis et al., 2018). A 2022 study on Australian engineering students repeating math courses considered what characteristics impacted success on a second attempt (Snead et al., 2022). Prior to this study, Ivy Tech had not done a full analysis of statewide data on students taking a course for the third time. As Ivy Tech and the State of Indiana strive to address the issues of student retention and completion, student success at the course level is a key factor in both. This study will also expand the body of research on course repetition for college students.

DEFINITION OF TERMS

Course Success: Student receives a grade of a C or better.

Course Completion: Student receives a grade of a D or better.

Dual Credit: A high school student takes college classes at their high school that are taught by a high school teacher who is credentialed by the college to teach dual credit. The course allows students to fulfill high school graduation requirements and provides college credits.

Dual Enrollment: High School students take college courses directly with a college while still in high school. This option is for students whose high school does not offer desired dual credit courses or for homeschooled students.

Gateway course: A first-level college course that is required for a degree or certificate.

Pell Eligible: Student eligibility for federal Pell Grants is based on exceptional financial need determined by student completion of the Free Application for Federal Student Aid (FAFSA).

Persistence: A student's ability to persist to the goal of completing a college degree or certificate.

Retention: A college's ability to retain a student through the process of completing a degree or certificate.

SPSS: A software package for the social sciences used for statistical analysis.

CHAPTER SUMMARY

Community colleges provide affordable access to higher education. This chapter provided context for the populations that these colleges serve and the challenges that these colleges and their students face in degree completion. An explanation of why completion has become a central focus in higher education was provided. This chapter also provided background information about Ivy Tech Community College and its policies on repeating courses. Federal aid policies and their impact on course repetition policies were discussed. As this chapter outlined, there are theoretical models regarding student persistence, but updated and focused research is needed to explore solutions to the issue of college completion for today's community college students. Students must successfully pass courses to earn a college degree. There have been a limited number of studies on course repetition in higher education. This study will explore the issue of students repeating a course for the third and final time at a large community college system. Phase One of this study will explain the scope of the third attempt issue, which courses are commonly repeated, student outcomes on their third attempt, and use statistical analysis to measure the association between various student characteristics and success on their third attempt. Phase Two of this study will evaluate student responses about their challenges on previous course attempts, and what they plan to do to be successful on their third attempt.

The next chapter will explore the research and data on college completion in more depth and review and assess the various theories on student retention that are most applicable to this study. Chapter Two will also review existing research on students repeating a course.

CHAPTER TWO: LITERATURE REVIEW

INTRODUCTION

This study seeks to understand the factors that impact success on the third attempt of a course at a community college. A student's success or failure of a course can impact the student's ability to persist at the college. Therefore, the literature review for this study begins with an overview of the relevant persistence theories for college students. Next, current research using national college enrollment and completion information that corresponds with the student characteristics in this study is reviewed. Finally, the results from existing studies on course repetition are summarized.

PERSISTENCE THEORIES

Integral to degree completion or even course completion is a student's ability to persevere through academic, non-academic, financial, and institutional challenges. Educational researchers have analyzed factors and created models of student attrition, retention, and persistence since the 1930s. McNeely studied student attrition from 1936-37 by analyzing academic, financial, demographic, and social factors and their correlation with student retention (Seidman et al., 2012). Research on student retention and the underlying issues related to student departure increased in the 1970s as the inevitable post-baby-boomer college enrollment decline began (Seidman et al., 2012). In the 1970s, both Spady and Tinto based their work on sociologist Emile Durkheim's 1951 suicide model. The commonality of Spady, Tinto,

and Durkheim's models is the concept of social integration. Social integration refers to the student's perception of their degree of social affiliation with others and how well their attitudes, beliefs, norms, and values align with the social communities of an institution, in this case, a college (Demetriou, & Schmitz-Sciborski, 2011). Spady studied various intrinsic and extrinsic factors like academic ability, friendship support, and intellectual development and their impact on student departure. Through empirical research, Spady found that academic preparedness had the most impact on student attrition (Habley, 2012). However, Spady noted the limitations of his research due to ever-changing demographic factors as well as differences in institutions (Seidman et al., 2012).

Tinto has continuously modified and expanded his student integration model, and it is often used as a theoretical perspective in higher education research. In Tinto's 1993 Model of Student Retention, he considers both the student's pre-existing attributes and institutional factors. Tinto believed that the more integrated a student was into the academic and social communities of the college, the more likely it would be for the student to achieve their academic goals (Seidman et al., 2012). Astin put forth similar ideas in his Theory of Involvement, suggesting that students learn more when they are involved in both the academic and social aspects of the collegiate experience (Habley, 2012). Tinto and Astin believed that when students experience social isolation or poor academic performance they become marginalized and are more likely to withdraw, but if students are involved in campus activities or utilize academic support programs, they are able to grow and succeed (Folsom et al., 2015, p. 71). Tinto's work has been used as the basis for various retention efforts at institutions but Tinto acknowledges that different groups of students will require different retention policies

and programs (Habley, 2012). The social integration aspects of these theories are difficult to test empirically (Braxton, 2013, p. 78).

Bean and Metzner believed that social integration models like Tinto's and Spady's put too much emphasis on social factors and did not provide discrete enough variables for meaningful study (Seidman et al., 2012). The increase in the number of older students attending college in the 1980s motivated Bean and Metzner's research on nontraditional students. Bean and Metzner broadly defined nontraditional students as being either older than 24, not living at a campus residence, or part-time (Bean & Metzner, 1985). Bean and Metzner's (1985) model of Nontraditional Undergraduate Student Attrition considered the impact of academic, background, psychological, and environmental factors on attrition. Bean and Metzner believed that environmental factors would outweigh social factors for nontraditional students since these students were more likely to have environmental factors like work and family and were less likely to participate in social college activities like extracurricular events and programs. Bean and Metzner described a compensatory effect between the academic and environmental factors that impact a student's ability to persist through graduation. Since Bean and Metzner believed that environmental factors have a larger impact on nontraditional students, they posited that good environmental factors could help students overcome poor academic factors. However, they believed poor environmental factors would increase the likelihood that students would drop out even if their academic factors were good (Bean & Metzner, 1985).

The Bean and Metzner Model of Nontraditional Student Attrition aligns more closely with the issues facing community college students than the earlier work of Tinto and Spady. The

social integration factors and the psychological outcomes for the students are still addressed in this model but a larger focus is put on the environmental factors nontraditional students face. Bean and Metzner's theory included both student issues, such as absenteeism, and organization issues, like course availability in the variables of their model. The interactions and relationships between student and organization issues make it difficult to categorize research data under this model. Stahl and Pavel (1992) undertook an empirical study of Bean and Metzner's model using urban community college students and found that it was a weak fit (Stahl & Pavel, 1992). Brown (2007) concluded that the Bean and Metzner model's construct of Social Integration did not explain student persistence for community college students, perhaps because the model was designed using information from older four-year college students (Brown, 2007). The Bean and Metzner model acknowledged the differences in college students' experiences based on their ages but was not designed with community college students in mind and has not been empirically confirmed to be useful for this purpose. Community college students have little time to experience the same social integration aspects that students in a four-year traditional college experience. The 2019 Community College Survey of Student Engagement found that 61% of community college students worked outside of school and 29% of students worked more than 30 hours per week (CCCSE, 2020). Of all community college students, 26% have dependent children, and 15% have children under the age of seven (Association of Community College Trustees (ACCT), 2018). Therefore, the factors that impact community college student persistence may differ from the models based on the four-year college experience.

Bean and Metzner's research expanded the study of retention to nontraditional students, building off of prior work by Tinto, Spady, and Pascarella (Bean & Metzner, 1985). Braxton, Hirshy, and McLendon sought to test Tinto's theory using empirical methods. They concluded that there was not sufficient evidence to support Tinto's 1975 model at two-year colleges (Braxton, 2013). Their research resulted in the development of two educational persistence theories that expand upon Tinto's ideas: one for residential campuses, and one for commuter campuses. As the researchers note, "In contrast to residential institutions, commuter colleges and universities lack well-defined and structured social communities for students to establish membership" (Braxton, Hirschy, and McClendon, 2004, p. 4). Therefore, Braxton, Hirshy, and McLendon's theory for commuter institutions considers the impact of student entry characteristics, the external environment, and the campus environment on student academic and intellectual development which impacts the student's subsequent institutional commitment (Braxton, et al., 2013, p. 110). Braxton, Hirshy, and McLendon believed that the social integration aspect of residential colleges was driven by the organization whereas a commuter student's ability to integrate into college was driven by external factors (Habley et al., 2012). Similar to Tinto's theory and Bean and Metzner's theory, Braxton, Hirshy, and McLendon created a longitudinal model with relational connections between its components. Students experience a constant push-and-pull effect between the student's psychological attributes (entry characteristics), the external factors students face, and the organization's ability to provide support to students. For example, the student entry characteristic of self-efficacy would impact their ability to deal with an external environmental threat like financial issues. The organization's characteristics would also play a role in a threat

like financial issues. If the student perceives that the college cares about their welfare, they are more likely to stay committed to the college (Braxton, 2013, p. 117). Braxton, Hirshy, and McLendon's analytical appraisal of their commuter college persistence theory showed partial empirical support. In particular, they found a strong link between a student's initial commitment, and a student's perception of the college's integrity to persistence (Braxton, et al., 2013). The researchers make several recommendations for future research including researching at a variety of institutions, focusing on student-faculty engagement, and assessing the efficacy of policies and practices on retention (Braxton, et al., 2013). While the empirical support for this model was only found to be partial, it offers three distinct and clear areas for categorizing factors of academic persistence.

STUDENT CHARACTERISTICS AND COLLEGE COMPLETION

The persistence theories described in the preceding section show that there is a complex interaction between various student, organization, and environmental characteristics that impact student success. However, it is still helpful to consider how individual characteristics and factors relate to student success because they provide measurable data that can be used to compare student populations in scholarly research. This section will provide a brief overview of the available data from research in higher education based on commonly identified student characteristics and their relation to college completion.

The most readily available metric of a student's academic ability is GPA. Several studies have found that GPA and academic success are related. In Pascarella and Terenzini's 2005 meta-analysis of 2,600 college students from 1989 to 2001, they found that college academic achievement was the strongest within-college predictor of educational attainment (Pascarella &

Terenzini, 2005, p. 396). In Adelman's 2006 "The Toolbox Revisited," Adelman discovered that college students who placed in the top 40% of their first-year GPAs were 22% more likely to earn a bachelor's degree (Adelman, 2006, p. 48). A longitudinal study of 1,729 first-time, full-time students at a community college by Craig and Ward (2008) using ANOVA analysis found that students who dropped out had an average GPA of 1.68, while those who remained enrolled after five years had an average GPA of 2.29. Those who graduated had an average GPA of 2.74. The average GPA for students who transferred to a four-year school was 2.52 and for those who both completed an associate degree and transferred averaged 2.90 (Craig & Ward, 2008, p. 5). An analysis of 56,818 college students by Seidman et al. (2012) found that high school GPA was the strongest pre-college characteristic in predicting baccalaureate completion (Seidman et al., 2012, p. 124).

Comparisons of college students by gender show that more women than men are enrolling in college, and women are graduating at a higher rate. A study by Ewert (2010) found that male students' persistence was more likely to be impacted by disrupted attendance patterns than female students. Ewert (2010) also concluded that male students were less academically integrated than female students and male students benefit more from social integration through participation in clubs or sports. Ewert's study did not support the hypothesis that male students underperformed due to enrolling in more majors with lower persistence rates (Ewert, 2010). According to a 2021 Pew Research survey of 9,676 adults, 34% of non-college-educated men stated they did not complete a four-year degree because they did not want to, compared to 25% of women (Parker, 2021). The Pew Research survey showed that Non-college-educated men were more likely (26%) than their female counterparts (20%) to say

that they didn't need more education for the job or career they wanted (Parker, 2021). Analysis by Reeves and Smith (2021) found that women are graduating at a higher rate than men at all levels of education and that this trend is not limited to the United States (Reeves & Smith, 2021). A review of National Student Clearinghouse Research Center (NSCRC) data for two-year college students by Causey et al. (2022) shows that 46.3% of women in the 2016 cohort graduated within six years while only 40.8% of men graduated in the same timeframe (Causey et al., 2022, p. 3). Leukhina and Smaldone (2022) found that in the mid-1970s, the enrollment of men and women in two-year colleges was equally balanced, but since the 1980s women have outnumbered men (Leukhina & Smaldone, 2022, para. 1). The NSCRC report on college enrollment by Berg et al. (2023) reports that 58% of public two-year students enrolled in Spring 2023 were female (Berg, et al., 2023, p. 10).

While college completion rates are increasing overall, research shows there are still persistent racial enrollment and achievement gaps in higher education. Carnevale and Strohl (2013), researchers for Georgetown University Center on Education and the Workforce, found that academically prepared African American and Hispanic students are disproportionately enrolled in crowded and underfunded two-year colleges and open-access four-year colleges, while White students are overrepresented in the most selective and well-funded colleges (Carnevale & Strohl, 2013, p. 7). Black and Native American students are more likely to delay college entry. Long's 2016 analysis of National Postsecondary Aid Study data found that 50% of Black male and 60% of Black female community college students were aged 25 years or older in 2012 (Long, 2016, p. 15). A 2019 study on Race and Ethnicity in Higher Education by Espinoza et al. (2019), reported that more than half of Native American and Pacific Islander undergraduate

students are 25 or older (Espinoza et al., 2019, p. 46). The analysis by Espinoza et al. (2019) found for traditional-aged students 18-to-24-year-olds in the U.S. in 2016, the overall enrollment rate was 40.9% but ranged from a low of 18.8% for Native American students to a high of 57.2% for Asian students (Espinoza et al., 2019, p. 41). Espinoza et al. (2019) also found that minority students are more likely to have lower socioeconomic status than White students. For students who applied for financial aid as dependents, 75.1% of Black and 70.8% of Hispanic students were in the bottom two income quartiles (Espinoza et al., 2019, p. 47). A report by Causey et al. (2022) of NSCRC data showed that for the 2014 cohort of students, the six-year rates for two-year public colleges for students who either completed a degree or transferred to a four-year college were 53.4% for Asian students, 50.6% for White students, 37.9% for Hispanic/Latino students, and 31.1% for Black students (Causey et al., 2022).

The research comparing Pell to non-Pell students has mixed results. A 2013 study of 56,595 first-time community college students by Sung-Woo et al. found that Pell recipients had lower levels of college readiness but a stronger academic focus than non-Pell students. The Sung-Woo et al. study determined that Pell recipients at community colleges were more likely to complete an award or transfer to a four-year college but took longer than non-Pell students to do so (Sung-Woo et al., 2013). Yuen (2019) found that first-time full-time Pell-eligible students in public two-year colleges were 7.3 percentage points less likely to complete than non-Pell students after eight years, but part-time Pell recipients who were not first-time students were 12.5 percentage points more likely to complete than non-Pell students (Yuen, 2019). Hillman's (2022) analysis of Department of Education data shows that the percentage of Pell Grant recipients enrolled at community colleges varies by institution, but the median

percentage of Pell recipients ranged from 25 to 30% from 2010 to 2020 (Hillman, 2022). Hillman (2022) reports that the completion rates for Pell recipients at community colleges have increased steadily since 2000. Hillman (2022) found that the median 150% timeframe completion rate for Pell-eligible students at community colleges was less than 10% in 2000 and was approximately 25% in 2018 (Hillman, 2022).

Community colleges tend to serve students who are older on average than four-year college students. Research shows that delayed entry is associated with lower graduation rates. A 2016 analysis by Ma and Baum determined that in public two-year colleges, 21% of students were under 20, 34% were between 20 and 24, and 44% were 25 and older in 2015 (Ma & Baum, 2016, p. 9). A review of NSCRC data by Causey et al. (2022) found that for first-time students, the six-year completion rate for two-year public college students who started college in 2017 at ages 20 or younger was 43.8%. The six-year completion rate for students between ages 20 and 24 was 34.7%, and the rate was 38.9% for students who started at an age older than 24 (Causey et al., 2022, p.7).

Because older students are more likely to work or have family commitments, they are more likely to attend part-time. Shapiro et al. note that attending college part-time impacts the 150% completion timeframe provided in IPEDS data. Analysis of six-year completion data by Shapiro et al. (2014) found that the overall six-year completion rate for full-time two-year college students was higher for younger students but part-time completion rates were higher for older students. For exclusively full-time students aged 20 or younger, 61.83% had completed a degree after six years, while 40.12% aged 20-to-24, and 48.4% of students over 24 had completed after six years. For part-time two-year college students the six-year completion

rates were 13.5% for those 20 or younger, 13.32% for students between 20 and 25, and 28.13% for students over 24 (Shapiro et al., 2014).

Not surprisingly, the number of hours students work impacts the number of credit hours they can complete and subsequently their ability to complete a degree. A study by Dadgar (2012) of working community college students in Washington state found that students who worked between 11 and 20 hours per week had the highest credit accumulation over time while those who worked 35 hours per week or more had the least credit accumulation. Dadgar noted that students who worked fewer hours tended to be traditional-aged students from families with higher incomes (Dadgar, 2012, p. 17). Community college students who attend exclusively part-time are more likely to drop out. Shapiro et al.'s analysis of NSCRC data found that 71.7% of students who attended part-time had not earned a degree and were no longer enrolled after six years (Shapiro et al., 2017, p. 26). According to Carnevale and Smith (2018), working more than 15 hours per week corresponds to a higher probability of noncompletion for low-income students (Carnevale & Smith, 2018, p. 13). Carnevale and Smith (2018) found that students from lower-income families work more hours and were more likely to work in jobs that are not related to their field of study versus students from higher-income families (Carnevale & Smith, 2018, pp. 17-18). The 2016 National Postsecondary Student Aid Study (NPSAS) also found that 70% of community college students said that their jobs were not related to their field of study and 64% had unmet financial needs (Beer & Bray, 2019, p. 5). The Community College Survey of Student Engagement 2019 survey found that 60% of respondents worried that working full-time was an issue that could cause them to withdraw from college (CCSSE, 2020, p. 3). The survey also found that the majority of community college students

work while attending school, with 69% of the community college students surveyed saying they work, and 29% said they work at least 30 hours per week (CCCSE, 2020, p. 3).

There are multiple factors related to student success and these factors are often interrelated. This section provided an overview of the most commonly studied college student characteristics.

SIMILAR STUDIES ON COURSE REPETITION

In reviewing scholarly research in education, a limited number of studies on student course repetition were found. The majority of these studies focused on the quantitative aspect of course repetition and its impact on student success in courses and the related impact on degree completion or timely completion.

In "The Toolbox Revisited," Adelman (2006) studied a cohort of college students to determine what aspects contributed to their ability to complete a bachelor's degree by their mid-20s using Department of Education data. In addition to standard characteristics of interest, Adelman calculated and analyzed the ratio of courses from which the student withdrew without penalty and those the student repeated to all courses in which the student enrolled (Adelman, 2006, p. 73). Adelman (2006) concluded that, "Withdrawing from or repeating 20% or more of courses decreases the probability of earning a bachelor's degree by nearly half" (Adelman, 2006, p. 105); 10% of students in the study's cohort had withdrawn or repeated 20% or more of their courses, and minority students were overrepresented in this subgroup. Adelman (2006) pointed out that the large number of withdrawals and course repetitions resulted in low credit production for students, hindering their ability to complete a degree on time. At the time of Adelman's study, very few college registrars reported restrictions on course

repetition. Adelman (2006) noted that it would be difficult to predict how restricting course retakes would impact students since students withdraw from or retake courses for a variety of reasons (Adelman, 2006, p. 120).

VanZile-Tamsen (2011) sought to identify the characteristics of University of Buffalo students most likely to withdraw and/or repeat courses and to examine the impact of withdrawn and repeated courses on time to degree. This quantitative study looked at ten years of data and almost 36,000 students at the University of Buffalo. VanZile-Tamsen (2011) found that slightly more than half of all students had withdrawn from a course at some time and almost all students had repeated a course. Males, students from under-represented groups, first-generation students, and those from low-income families were more likely to withdraw from courses, and male students and those from low-income families were more likely to repeat. VanZile-Tamsen concluded that these factors may also explain why these groups are less likely to finish their degree on time. This large longitudinal study provided important information about the scope of the issue of course repetition and which groups were the most impacted by course repetition.

Armstrong and Biktimirov (2013) studied business students repeating first-year core courses by analyzing university records of 116 students who took a total of 232 repeated courses across six subjects at a medium-sized Canadian university. This quantitative study used age, high school GPA, cumulative college GPA at the time of repeat, the time between retaking the course, and the standard deviation of their college course grades. Armstrong and Biktimirov (2013) concluded that, “A repeat is likely to be more successful if the student’s grade in the original course was not too low, if they did well in their other courses, and if their high school

average was high" (Armstrong & Biktimirov, 2013, p. 9). In other words, academically successful students are more likely to be successful when repeating a course. The length of time between repeating the course was not found to be a statistically significant factor in success. The students in this study ranged from 19 to 24 years old and were in a specific program. The authors also recognized that their quantitative study did not consider attitudinal, behavioral, and situational factors that might also influence student performance.

Lewis, Willingham, and Milner (2018) did a study on nursing programs at colleges in North Carolina. The researchers used surveys sent to nursing programs in the state to determine the incidence of nursing student course repetition and found it to be 11.5% for students in the program and as high as 28% for pre-licensure students. They also sought to understand the repeat policies at the institutions. While policies varied, the researchers noted that the majority of programs permitted a student to repeat only one failed course, some permitted a student to repeat twice, and a quarter did not permit any course repetition, instead dismissing students (Lewis et al., 2018). This research focused only on the rate of course repetitions in North Carolina and called for further research at the national level and additional research on the reasons that students fail courses.

Snead, Walker, and Loch (2022) studied the characteristics of 1,717 Australian students who repeated a first-year engineering math course and found that pass rates for students on their second attempt were significantly lower than pass rates for students enrolled on their first attempt, and that age, degree program, and pathway into university were predictors for which students were most likely to repeat. Snead, Walker, and Loch (2022) argued for an increased focus on and efforts targeting repeating students (Snead et al., 2022).

The existing research described above provides some insight into the scale of the issue of course repetition and areas of interest for further research. The research reviewed comes from a variety of higher education institutions and shows that there are varying policies on course repetition in higher education. This research suggests that the demographic and prior academic characteristics of students have an impact on the prevalence of course repetition and success. These studies all acknowledge that there are opportunities for additional research on this topic.

CHAPTER SUMMARY

The factors related to student persistence are complex and interwoven. Researchers agree that intrinsic and extrinsic factors play a role in student persistence. Social integration is more likely to play a role in persistence for traditional four-year college students, while environmental factors are believed to play a larger role for two-year college students. The research by Braxton, Hirshy, and McLendon on commuter institutions outlines the interplay of student entry characteristics with their external environment and their academic outcomes. The challenges to persistence that Braxton, Hirshy, and McLendon describe can be equally applied to student persistence in a single course. Research and data on the demographics of community college enrollment and completion provide foundational information against which to compare future research. Much of the existing research on course repetition considered the impact on a single program rather than a comprehensive review of course repetition at a whole institution. These studies provide interesting quantitative information but lack the additional insight that can be gained with qualitative research to understand the underlying issues that

impact student success. This study will add to this body of research with both quantitative and qualitative analysis of course repetition issues.

CHAPTER THREE: RESEARCH METHODOLOGY

INTRODUCTION

As colleges look to increase completion rates, understanding the underlying causes of student success and failure is essential. As noted by Bailey et al. (2015), there is little research at community colleges analyzing institutional policies (Bailey et al., 2015). Students cannot complete their degrees without completing the individual courses required for their degrees or certifications. This study seeks to understand the factors that impact student success on the third attempt of a course at Ivy Tech Community College. There has been limited research on this topic, and Ivy Tech has not previously studied the scope or issues surrounding third attempts of a course. By focusing on this single aspect of retention and completion, at a single institution, this study will expand the existing literature on students-repeating-courses research and provide insight for Ivy Tech on its institutional practice and procedures.

This chapter will outline the research questions that guided this study, the populations included in the research, and the statistical methods used to analyze the data collected.

RESEARCH QUESTIONS

The design and implementation of this study were guided by the following research questions.

1. How successful are students on the third attempt of a course?
2. What are the most commonly repeated courses and how do students perform on their third attempt?

3. What are the characteristics of third-attempt students and how are these characteristics associated with student success on their third attempt of a course?
4. What do students identify as the most common obstacles to successful course completion, and how do these obstacles impact success on their third attempt?
5. What resources are most helpful to students repeating a course for the third time?

RESEARCH METHODOLOGY

This study used a mixed methods approach with an exploratory sequence of two phases of research. According to Creswell, an explanatory sequential design begins with a quantitative phase, followed by a qualitative phase that helps explain the quantitative results (Creswell, 2021. p. 7). The goal of this research is to better understand the factors of success and failure for students on their third attempt of a course through analysis of quantitative data and qualitative observation. The combination of qualitative and quantitative methods will provide a more robust picture of the complex issue of students repeating a course for the third time than using one method alone. This study was not experimental and did not include an explicit intervention phase of research due to limitations of time and resources. However, as Teo (2013) points out, “Explanatory measurement can help in predicting behavior in the future and can also serve to support a theory or hypothesis” (Teo & Teo, 2013, p. 6).

The researcher first wants to understand the scope of the third attempt issue. How many students are taking a course for the third and final time? Which courses are being repeated? What are the success rates? Phase One of this study analyzed statewide data to provide fundamental information about student success on a third attempt, as well as the association between student success and various demographic and course characteristics. The researcher chose a primarily quantitative approach to this study because the scope of the third

attempt issue was previously unmeasured, and Ivy Tech's large size allows for the generation of a robust set of data. The Phase One data encompasses the entire population of third-attempt students at Ivy Tech over five years and represents a population study rather than a sample study. The data from Phase One of this study was comprised of five years of information on 10,431 students and 12,930 third-time attempts at courses. In addition to information about the third-attempt courses and grades, the college's institutional research department provided demographic and academic data associated with the third-attempt student population. This research aligns with Ivy Tech's commitment to help every student achieve their academic goals and its commitment to improve through empirical research and analysis (Ivy Tech, 2022b). The quantitative analysis of the data in Phase One of this study will address the research questions concerning the success rates of students on the third attempt of a course, which courses are most commonly repeated, how third-attempt students perform relative to one another, how third-attempt students perform relative to the general course populations, what the characteristics of third-attempt students are, and how student characteristics and student success on their third attempt are associated.

While the quantitative data in Phase One of this study provided essential information about the relationship between student demographic characteristics and success on the third attempt of a class, a quantitative analysis alone would not provide a full picture of the issue. Prior research in student persistence and retention has shown that student demographic characteristics are just one piece of the departure puzzle. Educational researchers such as Spady, Tinto, and Astin include student characteristics such as motivation and student goals and the impact of these characteristics on student persistence (Habley, 2012). Bean and Metzner,

and Braxton, Hirschy, and McClendon's theories expanded on existing research in higher education and added emphasis on the external factors that also impact student success. The researcher believes that qualitative methods are the best way to collect data on student motivation and the external factors that influence it. According to Merriam and Tisdell (2015), qualitative researchers are interested in understanding how people make sense of their world and the experiences they have in the world (Merriam & Tisdell, 2015, p. 6). The qualitative data in Phase Two will address the research questions regarding what third-attempt students have identified as common obstacles to success in their previous attempts, and what resources were most helpful on their third attempt. The qualitative data will provide insight into student perspectives on what can help them complete courses successfully. Phase Two of this study applied thematic analysis to 103 student appeal forms that are required for students to request to repeat a class for the third time. As Merrian and Tisdell (2015) state, "The key concern is understanding the phenomenon of interest from the participants' perspectives, not the researcher's" (Merriam & Tisdell, 2015, p. 16). By analyzing students' responses to why they were not successful in previous course attempts and what they plan to do on their third attempt to be successful, the qualitative portion of this study allows the student perspective to be heard. To place this study's research in the larger context of educational research, Braxton, Hirschy, and McClendon's theory of student persistence in commuter colleges and universities was selected by the researcher to provide a framework for organizing and explaining the qualitative data.

RESEARCH STUDY DESIGN

This study used a mixed methods approach divided into two phases with Phase One focused on the analysis of quantitative data from Ivy Tech's statewide system. Phase Two used qualitative analysis on student appeal forms from the Ivy Tech Lafayette campus.

Phase One Design

Phase One of this study used quantitative analysis to answer the first three research questions:

1. How successful are students on the third attempt of a course?
2. What are the most commonly repeated courses and how do students perform on their third attempt?
3. What are the characteristics of third-attempt students and how are these characteristics associated with student success on their third attempt of a course?

After institutional research approval was received from Ivy Tech and Ferris State University, Ivy Tech's Institutional Research department provided five years of data from 2018 to 2023. The data provided by Institutional Research represents the entire population of Ivy Tech students attempting a course for the third time and not a sample. The data for Phase One of this study is comprised of 12,930 third-attempt course results that belong to 10,431 unique students.

Phase One Variables

Ivy Tech utilizes a standard A, B, C, D, or F grading system and does not include plus/minus designations in official grades. A grade of W indicates that the student withdrew after the 100% refund date, which occurs at the one-eighth point in the course, but before the last date for withdrawal, which occurs at the three-fourths point of the course. The college also

designates a specific form of failure labeled as an FW, which denotes a failing grade in a course where the student stopped attending prior to the last day of the course and acts in the same way as an F in terms of calculating a student's grade point average (GPA). An "S" preceding a grade denotes that the course is an Academic Skills course which is a remedial prerequisite course that does not count toward graduation requirements or GPA. An SA equals an A, an SB equals a B, etc. While Academic Skills courses do not count towards graduation requirements, the credit hours are earned for the courses and count in federal aid calculations.

A *success* in this study will be defined as a student receiving a grade of C or better on the third attempt of a course and was recorded with an indicator value of 1 if a student received a C or better in the course. Students who received grades of SA, SB, and SC will also be included as an indicator of success in this study. A grade of C or better is typically needed for prerequisite course requirements and four-year institutions generally require at least a C or better for transfer. Courses for which students received a D, F, FW, SD, SF, SFW, or W grade were recorded with an indicator value of 0. Similarly, a *completion* was defined as a D or SD or better and was recorded with a value of 1, and failures and withdrawals were recorded with a value of 0. A grade of D or better can be used for Ivy Tech degree requirements as long as the student has an overall GPA of 2.00 or higher (Ivy Tech, 2022a), and the degree program does not stipulate that a higher grade is required for the course. The variables provided in the statewide data are defined in Table 1 below.

Table 1: Phase One Data Variable Definitions

INDEPENDENT VARIABLES	DEFINITION
Course Name	The course being repeated. *Examples: ENGL111, MATH123*
Term Code	The semester the third attempt was made. Coded as summer 2018 = 201810, fall 2018 = 201820, spring 2019 = 201830 etc.
Gender	Male, Female, or Not Reported
Pell Eligibility	Yes or No. Recorded as Yes if the student was marked as eligible at any time from 2018-2023 in the dataset.
Race/Ethnicity	White, Black, Hispanic, Asian, Unknown/Not Reported, Two or more races, Native or Islander*
Student Age Group	Age at the time of the third attempt. 17 or under, 18-19, 20-21, 22-24, 25-29, 30-39, 40-49, 50 and older**
Age Group by Type	Traditional = Aged 24 or under, Nontraditional = Older than 24
GPA Range	Cumulative GPA range at the end of the semester of the third attempt, given as the intervals: 0-0.49, 0.5-0.99, 1-1.49, 1.50-1.99, 2-2.49, 2.5-2.99, 3-3.49, 3.5 and up.
DEPENDENT VARIABLES	DEFINITION
Success	Not Successful = Student received an F, FW, SFW, W, SD, D = 0, Successful = Student received an A, B, C, SA, SB, SC =1
Completion	Not Completed= Student received an F, FW, SFW, W = 0, Completed= Student received an A, B, C, D, SA, SB, SC, SD =1

Notes:
**Because there were only 21 students identified as Alaskan Native or Pacific Islander and only 57 identified as Native American, these two categories were combined in the data results and listed as Native or Islander. The combined population only represented 0.6% of the third repeat students overall.*
***The proportions of third-attempt students in the older age groups were relatively small. To simplify the data and create similarly sized groupings, the groups for ages 30-to-34 and 35-to-39 were combined, as were 40-to-44 and 45-to-49, and all groups 50-and-older.*

The course name, gender, Pell eligibility, and race are all categorical variables measured at the nominal level. The grade outcomes are measured at the ordinal level and age and GPA data have intervals for their level of measurement. The dependent variables were measured as dichotomous categories and coded as 0 or 1 for course success and for course completion.

Pell eligibility is based on student financial need and is included in this research as a measure of student socioeconomic status. Federal Pell grants are based on the expected family contributions towards education costs determined by FAFSA submission. The majority of these grants go to families earning less than $20,000 annually (Hanson, 2023).

The GPA ranges represent the student's cumulative Grade Point Average on a standard 4.0 scale at the end of the semester they were enrolled in the third attempt of the course. Students by age group were further combined into simplified categorical classifications of traditional, students aged 24 or under, and nontraditional, students aged over 24.

Phase One Detailed Research Questions

To answer the first research question, the grade distribution of the third-attempt data and the success and completion rates were determined using the following questions and methods:

1. How successful are students on the third attempt of a course?
    a) What is the grade distribution for third-attempt data?
        - The frequency of each letter grade occurrence was determined using Excel.
    b) What percentage of students in the Phase One data received a C or better on the third attempt of a course?
        - This was determined by counting all the course successes divided by the total number of course attempts. This value will serve as a baseline average measure of student success on the third attempt of a course.
    c) What percentage of students in the Phase One data received a D or better on the third attempt of a course?
        - This was determined by counting all the course completions divided by the total number of course attempts. This value will serve as a baseline average measure of student completion on the third attempt of a course.

To answer the second research question, these areas of focus guided the analysis:

2. What are the most commonly repeated courses and how do students perform on their third attempt?

    a) What are the most commonly repeated courses in the third-attempt data?

        - This was determined by sorting and counting the courses in the third-attempt data based on their course name or course topic area. Because of the large number of courses listed in the data, the researcher chose to designate the top ten courses as *Commonly Repeated Courses* for this study.

    b) How common are third attempts for each of the commonly repeated courses? In other words, what percentage of course attempts over the five-year period were third attempts?

        - Statewide duplicated headcounts for all students enrolled in the commonly repeated courses were pulled from Ivy Tech's IvyAnalytics (Tableau, a data display tool) to determine the total non-dual credit headcount enrolled in these courses for the last five years. A duplicated headcount was chosen to ensure that the total number of attempts were recorded including the multiple attempts made by the repeating students.

        - To find what percentage of students enrolled in the third attempt of each course the number of third attempts in a course was divided by the statewide duplicated headcount for the course.

    c) What are the student success and completion rates for each of the commonly repeated courses in the third-attempt data?

        - This was determined by counting all the course successes for a specific course divided by the total attempts for a specific course in the third-attempt data. Similarly, the course completions were divided by the total third attempts to determine the third-attempt completion rate for each course.

The following subquestions compare the performance of third-attempt students relative to the average third-attempt students and relative to the general student population. For each of these subquestions, a proportion comparison using a two-sample two-tailed Z test was performed with an α-level of 0.05 representing statistical significance and an α-level of 0.01 representing a high level of statistical significance.

    d) Is there a statistically significant difference between the success rates of third-attempt students for each of the commonly repeated courses and the overall

average success rate for third attempts? In other words, how did the success rates in the commonly repeated courses compare relative to the average third-attempt success rate, and which course's success rates show statistically significant differences from the average rate?

- The null hypothesis is that there is no difference between the success rate of third-attempt students for specific courses and the overall average third-attempt success rate. Although the third attempt by course students is a subset of all third-attempt students, the population size of students in this study is sufficient to ignore the issue of independence.

e) Is there a statistically significant difference between the completion rates of third-attempt students for each of the commonly repeated courses and the overall average completion rate for third attempts?

- The null hypothesis is that there is no difference between the completion rate of third-attempt students for specific courses and the overall average third-attempt completion rate. Although the third attempt by course students is a subset of all third-attempt students, the population size of students in this study is sufficient to ignore the issue of independence.

f) Is there a statistically significant difference between the success rates of third-attempt students and the success rates for all students enrolled in each of the commonly repeated courses? In other words, how do the third-attempt students perform relative to the general population of all students enrolled in that course?

- Statewide grade statistics by course for the same time period were pulled from Ivy Tech databases for comparison.

- The null hypothesis is that there is no difference between the success rates for the third-attempt students and the general population of students taking the same specific course. Again, the third attempt by course students is a subset of all students, but the population size of students in this study is sufficient to ignore the issue of independence.

g) Is there a statistically significant difference between the completion rates of third-attempt students and the completion rates for all students enrolled in each of the commonly repeated courses?

- Statewide grade statistics by course for the same time period were pulled from Ivy Tech databases for comparison.

- The null hypothesis is that there is no difference between the completion rates for the third-attempt students and the general population of students

taking a specific course. Again, the third attempt by course students is a subset of all students, but the population size of students in this study is sufficient to ignore the issue of independence.

To answer the third primary research question related to the characteristics of third-attempt students, for each of the student demographic characteristic variables in this study, data on all Ivy Tech students was collected from the IvyAnalytics database to compare to the Phase One population of third-attempt students.

IBM SPSS Version 29 statistics software was used to create cross-tabulation tables for each of the student demographic variables for Phase One versus student success on the third attempt of the course. SPSS was used to perform Chi-square analyses and provide the effect size and level of statistical significance for each of these tables. These analyses were performed for each of the secondary questions.

3. What are the characteristics of third-attempt students and how are these characteristics associated with student success on their third attempt of a course?

    a) Is there an association between student gender and their success on the third attempt of a course?

        - The null hypothesis is that there is no association between student gender and their success on the third attempt of a course.

    b) Is there an association between student Pell eligibility and their success on the third attempt of a course?

        - The null hypothesis is that there is no association between student Pell eligibility and their success on the third attempt of a course.

    c) Is there an association between student race or ethnicity and their success on the third attempt of a course?

        - The null hypothesis is that there is no association between student race or ethnicity and their success on the third attempt of a course.

    d) Is there an association between student age and their success on the third attempt of a course?

- The null hypothesis is that there is no association between student age and their success on the third attempt of a course.

e) Which demographic characteristics have the most influence on success on the third attempt of a course?

Logistic regression can be used to determine the impact of multiple independent variables presented simultaneously to predict membership into one of two dependent variable outcomes, in this case, whether students were successful on their third attempt or not (Shi, 2021). Additional statistical values associated with logistic regression provide information about the goodness of fit of the model and the probability of being in an outcome group based on the independent variables (Shi, 2021).

- The data was coded numerically and entered into SPSS to perform a binary logistics regression.
- A binary logistic regression was used to examine how well the characteristics of gender, race/ethnicity, age, and Pell eligibility determined student success on the third attempt of a course.
- SPSS was used to generate an Omnibus Chi-Square value, Hosmer-Lemeshow test, and Nagelkerke R^2 values to measure the goodness of fit for the model.
- SPSS was used to generate odds ratios for each of the independent variables to measure each variable's contribution to membership into the third-attempt success group.

f) How strong is the correlation between cumulative GPA and student success?

- Excel was used to create a linear regression trendline and associated equation to model the relationship between GPA group and the student success rate for each GPA group.
- Pearson's r was used as a measure of the strength of the linear correlation between student GPA and the success rates for the GPA intervals.

Phase Two Design

Phase Two of this study seeks to answer the fourth and fifth research questions through qualitative methods:

4. What do students identify as the most common obstacles to successful course completion, and how do these obstacles impact success on their third attempt?
5. What resources are most helpful to students repeating a course for the third time?

In addition to Institutional Review Board approval from Ferris State and Ivy Tech, the Lafayette vice chancellor of Academic Affairs approved researcher access to the third attempt request forms for Ivy Tech Lafayette. A total of 103 third-attempt request forms were collected and analyzed. These forms were submitted by students from spring 2021 to summer 2023 semester. While this form shifted from paper to online over the research timeframe, the students were consistently asked why they were unsuccessful in their first attempts and what strategies they planned to utilize to be successful on their third attempt. A previously optional section of the form asking advisors to provide information about prior student performance became a requirement in 2023. Student responses on the forms varied from a few sentences to a few paragraphs.

The student responses from Phase Two of this study produced a large amount of information to be analyzed. Kimball and Loya state that the goal of the analytic process is to reduce the volume of information by identifying major patterns and themes within it (Kimball & Loya, 2017, p. 20). Open coding was performed by converting student statements about the issues they faced in their first two attempts of the course into shorter phrases or single words that captured the general theme. After open coding was performed on the first 50 third-attempt request forms, these themes were refined into categories. According to Merriam and

Tisdell, categories in qualitative research should be exhaustive, mutually exclusive, and make sense to an outside reader, and each category should be at the same conceptual level (Merriam & Tisdell, 2015, p. 213). After determining the categories, the first 50 forms were reevaluated to ensure consistency of coding. Additional forms were collected at the start of each semester of the study and processed using the same categories with a total of 103 forms being analyzed for Phase Two of the study.

After refining the list of categories based on common themes found in the student request forms, these categories were aligned with the components described in Braxton, Hirschy, and McClendon's theory of student persistence in commuter colleges and universities. The components in the theory are Student Entry Characteristics, External Factors, and Organizational Characteristics (Braxton, 2013). Braxton's examples of student entry characteristics include academic preparedness, self-efficacy, motivation, and affiliation needs (Braxton, 2013, p. 110). Part of the motivation for Braxton et al. to create a separate theory of student persistence for commuter college students was the acknowledgment that these students tend to face more challenges from external factors like finances, work, and family issues than students who attend a more traditional residential college (Braxton, 2013, p. 112). Braxton, Hirschy, and McClendon define the organizational characteristics in their model as the ways in which the institution commits to student welfare and the integrity with which the institution meets its mission (Reason & Braxton, 2023).

The components in Braxton, Hirschy, and McClendon's persistence theory are not independent but interact with one another. For example, a student's characteristic of self-efficacy will impact how well they manage an external factor like a financial issue. This

interconnectivity made it challenging to place the categories based on this study's student responses under just one component umbrella. For example, is mental health a student characteristic or an external factor? For the purposes of this study, categories that related to academic and emotional intelligence were aligned under Student Entry Characteristics. Factors that were outside of student control were aligned under External Factors, and factors that were under the college's control were aligned under Organizational Characteristics. Table 2 lists the categories determined from analysis of the third-attempt forms under the appropriate component heading from Braxton, Hirschy, and McClendon's Theory of Student Persistence in commuter colleges and universities.

Table 2: Phase Two List and Organization of Thematic Analysis Categories

Student Entry Characteristics	External Factors	Organizational Characteristics
• Motivation • Time Management • Academic Preparedness • Disability Service Needs	• Physical Health • Mental Health • Family Issues • Work • Modality Change (due to Pandemic closure) • Financial Issues	• Modality of Course (online e.g.) • 8-week Format • Student Course Load • Poor Instructor

Open coding was also performed on the student responses to what strategies they would utilize on their third attempt. Ivy Tech's third-attempt request form also provides a section for advisors and the approving college administrators to make notes and recommendations. Approval of a third attempt may be contingent on the student taking the course in a specific modality or requiring the student to restrict the number of credit hours they

attempt that semester. The advisor or administrators reviewing the form may also make recommendations for the student to meet with tutors or their advisor. The thematic analysis categories for this portion were broken into two broader components: (1) *Why* students will be successful, and (2) *How* students can ensure success. The categories under *Why* students or their advisors believe they will be successful are Confidence, Motivation, Life Changes, Proven Success, and Length of Time since Repeat. The categories under *How* students can ensure success are Meeting with an Instructor, Meeting Regularly with their Advisor, Working with Tutors, Participating in a Study Group, Increasing Time Spent on Coursework, Attending Class Regularly, Credit Hour Restrictions, Working with a Mentor, Planning with a Calendar, Taking the Course in 16-weeks (instead of 8), and Taking the Course in a Better Modality.

Phase Two Detailed Research Questions

To determine the answer to question 4, two questions were considered.

4. What do students identify as the most common obstacles to successful course completion, and how do these obstacles impact success on their third attempt?

    a) What were the most commonly identified issues that students reported as obstacles to success in their previous attempts?

        - Once the student responses to why they were unsuccessful in previous attempts were analyzed and sorted into categories, the number of responses for each category was tallied and the percentage of each category was calculated based on the total number of student forms in Phase Two.

    b) How do the issues that students identified as obstacles to success on previous attempts relate to their success on their third attempt of the course?

        - The number of students who were successful on their third attempt for each of the obstacle categories was tallied and the percentage of successes was calculated based on the total number of students who identified that obstacle.

To answer research question 5, four areas were considered.

5. What resources are most helpful to students repeating a course for the third time?

The following questions were considered.

a) What were the most common reasons students identified as to why they believed they would be successful on their third attempt?

- The number of responses for each reason was tallied, and the percentage of each category was calculated based on the total number of student forms in Phase Two.

b) How do the common reasons students identified as to why they believed they would be successful on their third attempt relate to their success on their third attempt of the course?

- The number of students who were successful on their third attempt for each of the reasons was tallied, and the percentage of successes was calculated based on the total number of students who identified that reason.

c) What were the most common strategies for success that students and advisors reported they would use on their third attempt?

- The number of responses for each strategy was counted, and the percentage of each category was calculated based on the total number of student forms in Phase Two.

d) How do the strategies that students and advisors identified relate to their success on their third attempt of the course?

- The number of students who were successful on their third attempt for each of the strategies was tallied, and the percentage of successes was calculated based on the total number of students who identified that strategy.

STUDY DELIMITATIONS AND LIMITATIONS

Delimitations

This study is limited to Ivy Tech Community College. The data collected and the participants surveyed were restricted to Ivy Tech students taking courses either through an Ivy Tech campus or through Ivy Tech's statewide online system. Dual-credit students who take courses at a high school with a credentialed high school teacher were not included in this study.

By excluding dual credit students, the data is limited to students and experiences that are under the direct control of Ivy Tech campuses. Students in this study may have taken their initial attempt of a course in a high school dual credit class since these courses appear on Ivy Tech transcripts.

Ivy Tech also supports Indiana high school students through dual enrollment. Dual enrollment students are high school students who take Ivy Tech courses taught by Ivy Tech instructors either in their high school or at an Ivy Tech campus. Because dual enrollment high school students who take courses at Ivy Tech are treated as regular college students during their dual enrollment, they were not excluded from the Phase One data collection. However, it is unlikely that a dual enrollment student would reach a third attempt of a course while still in high school.

The statewide data for Phase One of the research consisted of five years of data from all Ivy Tech campuses with 10,431 unique students who attempted 12,930 courses for a third time from summer 2018 through spring 2023. This large data set increases the reliability of the quantitative results.

The data for Phase Two of the study was limited to the Ivy Tech Lafayette campus, which is the researcher's home campus. The forms analyzed in Phase Two consisted of 103 approved third-attempt requests. Focusing on students at the Lafayette campus allowed the researcher better access to participants and to the staff and administrators involved in advising and making decisions regarding these students. The forms analyzed in Phase Two of the research came from Lafayette students from spring 2021 through summer 2023.

Limitations

This study uses data from Ivy Tech Community College only, limiting the external validity or ability to apply the results to other colleges. The college policies and procedures surrounding third attempts described in this study are also specific to Ivy Tech. While the data in Phase One is specific to Ivy Tech, the student statements in Phase Two are not college-specific and may be reflective of the issues that many college students face in any higher education institution.

In addition to serving students in a diverse set of communities, Ivy Tech offers courses in a variety of modalities. Classes are offered in a traditional, in-person option from all campuses. Ivy Tech courses designated as Online are completely asynchronous, while Virtual courses include a set online, synchronous lecture time. There are also Blended and Learn Anywhere modalities that combine aspects of traditional, virtual, and online experiences. Because Ivy Tech is a singly accredited institution, all campuses meet the same curriculum standards and follow the same academic policies regardless of location or modality. The students may have attempted the courses in this study in any of these modalities. The modality for the courses was not coded into the Phase One data, so cannot be analyzed in that portion. Phase Two was able to capture student statements about the impact of course modality on their experience.

Ivy Tech's campus resources and implementation of policies can vary. For example, access to tutoring or the ability to meet with an advisor may be limited at some campuses or sites but Phase One of this study assumes a homogeneous experience for students across the college and will not separate the statewide data into campus-level data.

The data for this study includes semesters in which students and the college were impacted by the COVID-19 pandemic. Ivy Tech shut down at the midpoint of the spring 2020

semester for one week before resuming classes. Courses that had met in person were converted to a virtual format for the remainder of the semester. Students were not able to attend classes in person again until the fall of 2021 and even then, COVID restrictions including wearing a mask and quarantining if exposed, were in place. The data and analysis in Phase One do not separate or compare the semesters in which campuses were shut down due to the pandemic. The qualitative data in Phase Two does include students' references to COVID and the shutdown and the analysis of this data will consider COVID as a factor in student success or failure.

The appeal form used in Phase Two of this study was not designed for research and is an open-response form. Because the student's goal in completing this form is to receive approval to take the course, the student's responses may reflect social desirability bias. Social desirability bias is a type of response bias that occurs when respondents give answers to questions that they believe will make them look good to others (Nikolopoulou, 2022a, para. 1). Students may have received coaching or assistance from their advisors in filling out the form, which may have further introduced social desirability bias. Some students wrote one or two sentences; others provided one to two pages of information. The individual student forms may include inaccurate, misleading, or incomplete information regarding the challenges faced in earlier attempts and the strategies they plan to use on their third attempt. As with any qualitative study, there are challenges to objectivity for both the participants and the researcher, but analyzing a large number of these forms as objectively as possible will help mitigate internal validity concerns. Utilizing multiple methods provides a form of triangulation, which Merriam

and Tisdell describe as a principal strategy to ensure validity and reliability (Merriam & Tisdell, 2015, p. 246).

CHAPTER SUMMARY

This chapter provided detailed information about the research questions and methodology used in this study. The two phases of this study along with the independent and dependent variables were explained along with a description of the statistical methods that will be used for analysis. The limitations and delimitations were also described. The next chapter provides the outcomes and analysis for this study.

CHAPTER FOUR: RESULTS AND ANALYSIS

INTRODUCTION

The purpose of this mixed methods study was to determine the prevalence of students taking a third attempt of a course at Ivy Tech Community College, the outcomes of the third attempts, and the factors that impacted student success on their third attempt. The quantitative Phase One outcomes will include the grade distribution for third attempts, a ranking of the commonly repeated courses, comparison of third-attempt student success rates by course, comparison of third-attempt student course success to the general population, and statistical analysis of outcomes based on student characteristics. The qualitative findings from Phase Two will report the responses from third-attempt students on why they were unsuccessful on previous attempts, the student responses on what they planned to do to be successful on their third attempt, and the success rates associated with these responses.

PHASE ONE: PRE-ANALYSIS DATA SCREENING

Ivy Tech Community College's Institutional Research office provided five years' worth of data on the third attempt of courses for this study. This data contained 13,250 lines of anonymized data. There were 287 lines of repeat listings for the same student and for the same course. The most likely reason this occurred was students who took a course twice during the same semester. Ivy Tech has become a primarily eight-week institution. Since the college's fall and spring semesters are split into two eight-week parts of term, students could retake a class

in the second part of the term if they were not successful in the first part. This caused both attempts to appear in the third attempt data because both grades were reported for that semester. In these cases, the lower grade or W grade was removed from the data so that the highest overall grade achieved was recorded in the final data, as it would be on a student's final transcript.

There were 33 lines of data with nonstandard grades of either AU for Audit, U for unsatisfactory, S for satisfactory, I for Incomplete, or NG for No Grade. The grades of U for unsatisfactory and S for satisfactory would typically require a student to declare their wish to be graded as pass/fail when registering for a course but all students were given the option to request their grades to be pass/fail during the Spring 2020 semester due to the COVID-19 shutdown. Students who chose this option received an S if their grades would have been an A, B, or C, and a U if their grades would have been a D or F (Ivy Tech, 2022a). There were only seven instances of a U or S recorded in this data. Ivy Tech students may request an Incomplete grade, if they have completed the majority of coursework and are passing a class but are unable to complete the course due to mitigating circumstances. Students have 30 days after the start of the next semester to complete coursework for an Incomplete grade. Because the data for this study was pulled before the last semester's incomplete completion deadline, there were nine instances of an Incomplete being recorded. Students may also Audit courses by request and receive an AU designation on their transcript with no credit being awarded for the course; there were nine instances of this in this study's data. There were seven instances in the data of students receiving No Grade, NG, and it is unclear why this occurred. The lines of data with grades of U, S, I, AU, and NG were less than .25% of the data and were removed from the data

for this study. This resulted in 12,930 lines of data representing 10,431 unique students, since some students repeated more than one course in the dataset.

PHASE ONE: QUANTITATIVE DATA RESULTS AND ANALYSIS

Findings and Analysis Research Question 1: *How successful are students on the third attempt of a course?*

Question 1a: What is the grade distribution for third-attempt data?

After the initial cleaning of the Phase One data was completed, Excel was used to determine the frequency of each third-attempt grade outcome. The frequencies are summarized in Table 3. The percentage column in Table 3 is the count value for each grade divided by the 12,930 total third attempts.

Table 3: Phase One Third Attempt Grade Distribution (n = 12,930)

THIRD ATTEMPT GRADE	COUNT (#)	PERCENT (%)
A	2,457	19.0
B	2,850	22.0
C	2,682	20.7
D	1,082	8.4
F	1,292	10.0
FW	1,583	12.2
SA	28	0.2
SB	43	0.3
SC	55	0.4
SD	21	0.2
SF	36	0.3
SFW	28	0.2
W	773	6.0
Total	12,930	100%

Question 1b: What percentage of students in the Phase One data received a C or better on the third attempt of a course?

A grade of C or better will be defined as a *success* and will include the SA, SB, SC grades as well. Of the 12,930 courses repeated, there were 8,115 grades of C or better or equivalent successes, meaning 62.8% of third attempts were successful. This value will be used as a baseline value for *success* for other statistics in this study.

Question 1c: What percentage of students in the Phase One data received a D or better on the third attempt of a course?

A grade of D (or SD) or better will be defined as a *completion.* 9,254 of the courses were completed with a D or better or equivalent completion, representing 71.6% of the total attempts.

Research Question 1: Discussion of Findings

The first question raised in this study was, "How successful are students on the third attempt of a course?" The majority of third attempts, 62.8%, resulted in a grade of C or better. The A, B, and C grades were evenly distributed with about 20% in each category. A grade of C or better in a course ensures that the students can use courses as a prerequisite, when required, and the course is more likely to be accepted at a transfer institution. The motivation to receive a C or better may explain the relatively low percentage of 8.5% of third attempts that resulted in a grade of D. A grade of D may be used to meet the Ivy Tech requirements for a degree or certificate as long as the student has an average cumulative GPA of 2.00 and barring any additional program requirements (Ivy Tech, 2022a). Because Ivy Tech third-attempt students must complete the appeal process to make their third attempt, they should be aware that they may not repeat a course more than three times. Despite the implications of not successfully

completing the course on their third attempt, 6% of the students in the Phase One data chose to withdraw from their third attempt and 12.5% received an FW, meaning they failed, in part, due to not attending through the end of the semester. Follow-up analysis of the FW data showed that the math, English, and communication classes all had FW rates over 14%. The MATH135 and MATH136 classes also had W rates of 11.5% and 15.8% respectively. This means one-third of the third-attempt students in these math courses either withdrew or failed due to not completing the course.

Findings and Analysis Research Question 2: *What are the most commonly repeated courses and how do students perform on their third attempt?*

Question 2a: What are the most commonly repeated courses in the third-attempt data?

The results of the data analysis for *Question 2a* are listed in Table 4. Out of the 12,930 courses repeated from 2018-2023, there were 492 unique courses listed. The ten courses listed in Table 4 make up 58.4% of the enrollments in the third-attempt data. The numbers in the *Third Attempt Enrollment by Count* column represent the count of third attempts in each of these courses and the *Third Attempt Enrollment by Percentage* column is based on the *Third Attempt Enrollment by Count* value divided by the total of all third attempts in the data (n = 12,930). ENGL111 was the most repeated course, representing 18.4% of all third-attempt data. Math was the most repeated topic with 21.6% of all third attempts taken in a course with a MATH prefix. Anatomy and physiology topic courses comprised 14.0% of all third attempts. Introduction to Psychology, Fundamentals of Public Speaking, Financial Accounting, and a Student Success course also appear in the most commonly repeated courses.

Table 4: Phase One Third Attempt Enrollment in the Most Commonly Repeated Courses

Most Commonly Repeated Courses	Third Attempt Enrollment by Course, #	Third Attempt Enrollment by Course, %
ENGL111: English Composition	2,384	18.4
APHY101: Anatomy and Physiology 1	1,404	10.9
MATH123: Quantitative Reasoning	1,104	8.5
PSYC101: Introduction to Psychology	708	5.5
MATH136: College Algebra	676	5.2
APHY102: Anatomy and Physiology 2	367	2.8
COMM101: Fundamentals of Public Speaking	249	1.9
ACCT101: Financial Accounting	238	1.8
IVYT111: Student Success in University Transfer	220	1.7
MATH135: Finite Math	202	1.6

Question 2b: How common are third attempts for the commonly repeated courses?

To determine the prevalence of third attempts, the number of students taking each course for the third time was divided by the statewide duplicated headcount for all students enrolled in the course over the research timeframe. The percentages of third-attempt students enrolled in the commonly repeated courses ranged from 0.4% to 4.8%. The numbers and percentages are provided in Table 5 below. APHY101 had the largest proportion of third-attempt students with 4.8% of all students enrolled taking the course for the third time. ENGL111 and MATH136 had more than 4% of students enrolled statewide taking the course for a third time, and MATH123 was close behind at 3.6%. Beyond these courses, less than 2.5% of any course's enrollment was made of up students on their third attempt.

Table 5: Phase One Third Attempt Course Enrollment Relative to Total Statewide Course Enrollment

Most Commonly Repeated Courses	Third Attempt Enrollment by Course, #	Statewide Enrollment by Course, #	Third Attempt Enrollment by Course, %
APHY101: Anatomy and Physiology 1	1,404	29,450	4.8
MATH136: College Algebra	676	15,009	4.5
ENGL111: English Composition	2,384	56,415	4.2
MATH123: Quantitative Reasoning	1,104	30,926	3.6
MATH135: Finite Math	202	7,989	2.5
APHY102: Anatomy and Physiology 2	367	17,812	2.1
ACCT101: Financial Accounting	238	14,902	1.6
PSYC101: Introduction to Psychology	708	57,490	1.2
COMM101: Fund. of Public Speaking	249	44,368	0.6
IVYT111: Student Success in Univ. Transfer	220	51,975	0.4

Question 2c: What are the student success and completion rates for each of the commonly repeated courses in the third-attempt data?

The *Third Attempt Success Count* and *Third Attempt Success Percentage* columns in Table 6 show the number and percentages for third attempts in which students earned a C or better. Similarly, the number and percentages of third attempts in which students earned a D or better are reported in the *Completion* columns. Third-attempt success rates in the commonly repeated courses ranged from 48.5% to 73.9%, each varying from the average third-attempt success rate of 62.8% by more than ten percentage points. The third-attempt completion rates for these courses ranged from 58.4% to 81.7%, which vary by more than ten percentage points from the average third-attempt completion rate of 71.6%. Math courses had the lowest third-

attempt success rates with a success rate of 49.2% for all math courses and an average math third-attempt completion rate of 63.3%. For anatomy and physiology courses, the success rates were 73.2% and the completion rates were 81.3% for third attempts.

Table 6: Phase One Third Attempt Success and Completion Rates in the Most Repeated Courses

Most Commonly Repeated Courses	Third Attempt Success, #	Third Attempt Success, %	Third Attempt Completion, #	Third Attempt Completion, %
PSYC101: Introduction to Psychology	523	73.9	566	79.9
APHY102: Anatomy and Physiology 2	271	73.8	300	81.7
APHY101: Anatomy and Physiology 1	1,023	72.9	1,139	81.1
IVYT111: Student Success in University Transfer	143	65.0	162	73.6
COMM101: Fund. of Public Speaking	160	64.3	172	69.1
ENGL111: English Composition	1,483	62.2	1602	67.2
ACCT101: Financial Accounting	138	58.0	161	67.6
MATH135: Finite Math	104	51.5	118	58.4
MATH123: Quantitative Reasoning	535	48.5	717	64.9
MATH136: College Algebra	328	48.5	396	58.6

Question 2d: Is there a statistically significant difference between the success rates of third-attempt students for each of the commonly repeated courses and the overall average success rate for third attempts?

The Z tests showed that the success rates for students in ENGL111, COMM101, ACCT101, and IVYT111 courses were not significantly different from the overall third-attempt success rate of 62.8%. For all of the other commonly repeated courses, the statistical tests showed evidence that the differences between the course third-attempt success rate and the overall average success rate were highly statistically significant. Students attempting math courses for the third time underperformed compared to other third-attempt students while students in the APHY101 and APHY102 courses performed better than average on their third attempt. The success rates and the *p* values for the statistical tests comparing each course's third-attempt success rate to the overall average third-attempt success rate are provided in Table 7 below.

Table 7: Analysis Results Third Attempt Course Success Compared to Average Third Attempt Success

Most Commonly Repeated Courses	Third Attempt Success %	*p* Value
PSYC101: Introduction to Psychology	73.9	*p < 0.001*
APHY102: Anatomy and Physiology 2	73.8	*p < 0.001*
APHY101: Anatomy and Physiology 1	72.9	*p < 0.001*
IVYT111: Student Success in Univ. Transfer	65.0	0.498
COMM101: Fund. of Public Speaking	64.3	0.635
ENGL111: English Composition	62.2	0.583
ACCT101: Financial Accounting	58.0	0.136

Most Commonly Repeated Courses	Third Attempt Success %	*p* Value
MATH135: Finite Math	51.5	0.001
MATH123: Quantitative Reasoning	48.5	*p < 0.001*
MATH136: College Algebra	48.5	*p < 0.001*
Total Third Attempts	62.8%	

Question 2e: Is there a statistically significant difference between the completion rates of third-attempt students for each of the commonly repeated courses and the overall average completion rates for third attempts?

The Z tests comparing the individual courses' third-attempt completion rates to the overall third-attempt average completion rate of 71.6% did not result in a large enough of a statistical difference to reject the null hypothesis for the COMM101, ACCT101, or IVYT111 courses, meaning the completion rates for third-attempt students in these courses were close to the average third-attempt completion rate. The Z test results for all of the other commonly repeated courses showed evidence of a statistical difference between the third-attempt completion rates for those courses and the overall average third-attempt completion rate. Third-attempt students in the ENGL111, MATH123, MATH136, and MATH135 courses had lower completion rates than average, while third-attempt students in the APHY101, APHY102, PSYC101, and IVYT111 courses had higher than average completion rates. The completion rates and the *p* values for the statistical tests comparing each course's third-attempt completion rate to the overall average third-attempt completion rate are provided in Table 8 below.

Table 8: Analysis Results Third Attempt Course Completion Compared to Average Third Attempt Completion

Most Commonly Repeated Courses	Third Attempt Completion %	*p* Value
APHY102: Anatomy and Physiology 2	81.7	p < 0.001
APHY101: Anatomy and Physiology 1	81.1	p < 0.001
PSYC101: Introduction to Psychology	79.9	p < 0.001
IVYT111: Student Success in Univ. Transfer	73.6	0.497
COMM101: Fundamentals of Public Speaking	69.1	0.393
ACCT101: Financial Accounting	67.6	0.196
ENGL111: English Composition	67.2	p < 0.001
MATH123: Quantitative Reasoning	64.9	p < 0.001
MATH136: College Algebra	58.6	p < 0.001
MATH135: Finite Math	58.4	p < 0.001
Total Third Attempts	71.6%	

Question 2f: Is there a statistically significant difference between the success rates of third-attempt students and the success rates for all students enrolled in each of the commonly repeated courses?

The *Statewide Success by Course Percentage* column is based on IvyAnalytics data from the same five-year time period as the Phase One third-attempt data and represents the percentage of students who received a C or better out of all students enrolled in the course during that time period. There was no meaningful statistical difference between the third-attempt population and the total course-enrolled population's performance for the PSYC101, ACCT101, and MATH136 courses. Third-attempt students in ENGL111, APHY101, and the IVYT111 course performed better than the general population of students in those courses and

the Z test results showed evidence that these differences were highly statistically significant. The third-attempt students in APHY102, COMM101, and MATH135 success rates were worse than the general population of students in those courses at a highly statistically significant level. The success rate for students taking a third attempt in MATH123 was 3.2 percentage points lower than the success rate for all MATH123 students, which showed a statistically significant difference. The success rates and the *p* values for the statistical tests are provided in Table 9 below.

Table 9: Analysis Results Third Attempt Course Success Compared to All Student Success Rate

Most Commonly Repeated Courses	Third Attempt Success by Course, %	Statewide Success by Course, %	*p* Value
PSYC101: Introduction to Psychology	73.9	71.9	0.231
APHY102: Anatomy and Physiology 2	73.8	80.8	0.003
APHY101: Anatomy and Physiology 1	72.9	66.5	$p < 0.001$
IVYT111: Student Success in Univ. Transfer	65.0	73.8	0.006
COMM101: Fund. of Public Speaking	64.3	73.4	0.003
ENGL111: English Composition	62.2	58.4	$p < 0.001$
ACCT101: Financial Accounting	58.0	63.2	0.103
MATH135: Finite Math	51.5	67.4	$p < 0.001$
MATH123: Quantitative Reasoning	48.5	51.7	0.033
MATH136: College Algebra	48.5	49.2	0.746

Question 2g: Is there a statistically significant difference between the completion rates of third-attempt students and the completion rates for all students enrolled in each of the commonly repeated courses?

Table 10 lists the completion rates from IvyAnalytics (Tableau) for all students enrolled in the commonly repeated courses from the same timeframe as the Phase One data. The Z test calculations did not show evidence of a statistical difference between the completion rate for third-attempt students and the completion rate for all students enrolled in the PSYC101, MATH136, ACCT101, or IVYT111 courses. Third-attempt students in ENGL111, APHY101, and MATH123 had higher completion rates than the total population of students enrolled in those courses, and the Z tests used to compare these rates showed evidence that the difference was statistically significant. Third-attempt students in APHY102, COMM101, and MATH135 had completion rates below the average total population completion rates in those courses with evidence from the Z tests indicating these differences were statistically significant. The third attempt MATH135 students had a completion rate of almost 14 percentage points below that of the general population of MATH135 students.

Table 10: Analysis Results Third Attempt Course Completion Compared to All Student Completion Rate

Most Commonly Repeated Courses	Third Attempt Success by Course, %	Statewide Success by Course, %	*p* Value
APHY102: Anatomy and Physiology 2	81.7	86.6	0.034
APHY101: Anatomy and Physiology 1	81.1	74.1	$p < 0.001$
PSYC101: Introduction to Psychology	79.9	77.2	0.097
IVYT111: Student Success in Univ. Transfer	73.6	78.7	0.116
COMM101: Fund. of Public Speaking	69.1	77.0	0.009

Most Commonly Repeated Courses	Third Attempt Success by Course, %	Statewide Success by Course, %	*p* Value
ACCT101: Financial Accounting	67.6	69.7	0.528
ENGL111: English Composition	67.2	62.9	$p < 0.001$
MATH123: Quantitative Reasoning	64.9	61.2	0.015
MATH136: College Algebra	58.6	57.3	0.508
MATH135: Finite Math	58.4	72.3	$p < 0.001$

Research Question 2: Discussion of Findings

The second research question sought to determine which courses were most commonly repeated and how students performed by course. It is not surprising that the list of most commonly repeated courses is comprised of gateway courses that are essential to many college degrees. The most common third-attempt course was ENGL111, Ivy Tech's introductory English Composition course. All Ivy Tech Associate of Science and Associate of Arts degrees require ENGL111 and many of the Associate of Applied Science degrees have ENGL111 as a selection from a list of requirements for the degree. Three gateway math courses appear in the top ten courses repeated and math courses made up 21.6% of courses in the Phase One data overall. The IVYT111 course is a one-credit student success course that students take at the beginning of their Ivy Tech degree and is required in many programs.

With the exceptions of the anatomy and physiology courses, and the student success course, each of the courses in the top ten list are on Indiana's core transfer library list that ensures the transferability of courses between colleges (Indiana CHE, 2023). While student status was not included in the Phase One data, 6-7% of all Ivy Tech students were enrolled as

guest students during the Phase One timeframe. Students who have struggled with completing gateway courses at other institutions may be enrolling as guest students and attempting these courses again at Ivy Tech for transfer back to their home institutions.

The anatomy and physiology courses in the commonly repeated course list are not only a requirement for several of Ivy Tech's healthcare degrees, but the Nursing and Respiratory Therapy programs include performance in these courses as part of their selective admission acceptance criteria. Students may be repeating these courses not because they failed them previously, but to achieve a higher letter grade to increase their chance of admission to these programs. This may explain the higher-than-average success and completion rates for the APHY courses relative to the other third-attempt success rates. APHY101 also had the highest rate, 4.8%, of students taking the course for the third time out of all students enrolled in the course statewide. This rate is lower than the rates of 11.5% for students in nursing programs in North Carolina and 28% for pre-licensure students found in the Lewis, Willingham, and Milner (2018) study, but the North Carolina study was for any course repetition rather than a third attempt.

Overall, third-attempt students represent less than 5% of the students enrolled in any given course in the Phase One data. Outside of the ENGL111, MATH, and APHY courses, less than 2% of students enrolled in any course were taking the course for the third time. The data also showed that the English and math courses had high rates of W and FW grades. This suggests that the college should focus its attention on interventions and resources in the English, math, and anatomy gateway courses.

The overall third-attempt success rate was 62.8%, but this average is not representative of the success outcomes in every course. Students in the PSYC and APHY courses had third-

attempt success rates that were ten percentage points higher, while performance in the MATH courses was ten percentage points lower than the average third-attempt success rate. Third-attempt students only performed better than the general course population at a significant level in APHY101, and ENGL111. The Phase One data showed that the course success for third-attempt students was worse than the general population for most courses. This is similar to the Australian study by Snead, Walker, and Loch (2022), which found that pass rates for students on their second attempt were significantly lower than pass rates for students enrolled on their first attempt.

Findings and Analysis Research Question 3: *What are the characteristics of third-attempt students and how are these characteristics associated with student success on their third attempt of a course?*

Question 3a: Is there an association between student gender and their success on the third attempt of a course?

As shown in Table 11, there were 246 students who did not identify a gender. Of the students who did not report a gender 71% listed their race as unknown, which suggests that the student information intake for the majority of these 246 students was incomplete rather than an explicit choice to not identify a gender. These 246 cases were excluded from the analysis because they only made up 1.9% of the data.

Female students are overrepresented in the third attempt data with 65.7% of students identifying as female and 32.4% identifying as male, compared to Ivy Tech's total student data from the same timeframe in which 55.2% of students identified as female and 41.1% as male. Additional analysis of the commonly repeated courses showed that female students were very

overrepresented in some of the most commonly repeated courses in the data. The percentage of third-attempt female students in the APHY courses was 90%, 82.4% in the MATH123 course, and 79.1% in the PSYC101 course.

Table 11: Phase One Third Attempt Population and Ivy Tech Population by Gender

Gender	Third Attempts by Gender Count	Third Attempts by Gender %	Ivy Tech Students by Gender %
Male	4,183	32.4	41.1
Female	8,501	65.7	55.2
Not Reported	246	1.9	3.7
Total	12,930	100%	100%

SPSS was used to analyze the 12,684 lines of data where gender was identified as male or female. The cross-tabulation analysis in Table 12 indicates that students who identified as female were more successful on third attempts than the students who identified as male by 4.3 percentage points. The Chi-square test results shown in Table 13 show that the association between gender and success on a third attempt of a course was statistically significant. However, the effect size Phi equal to 0.042 indicates that the relationship between the two variables is weak.

Table 12: Third Attempt Students by Gender vs Third Attempt Success Cross-tabulation

	Female Success #	Female Success %	Male Success Count	Male Success %	Total Success Count	Total Success %
Not Successful	$3{,}041_a$	35.8	$1{,}677_b$	40.1	4,718	37.2
Successful	$5{,}460_a$	64.2	$2{,}506_b$	59.9	7,966	62.8
Total	8,501	100%	4,183	100%	12,684	100%

Note: Each subscript letter denotes a subset of Gender categories whose column proportions do not differ significantly from each other at the .05 level.

Table 13: Third Attempt Students by Gender vs Third Attempt Success Chi-Square Tests

	Value	Degrees of Freedom	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	22.382[a]	1	<.001		
Phi	-0.042		<.001	<.001	<.001
N of Valid Cases	12,684				

Note: [a] 0 cells (0.0%) have expected count less than 5. The minimum expected count is 1,555.93.

Question 3b: Is there an association between student Pell eligibility and their success on the third attempt of a course?

Pell-eligible students appear to be overrepresented in the third attempt data relative to the Ivy Tech student population. As shown in Table 14, 72.2% of the students in the third attempt data were Pell eligible compared to 43.3% of all first-time students reported by Ivy Tech as Pell eligible (Indiana CHE, 2022).

Table 14: Phase One Third Attempt Population and Ivy Tech Population by Pell Eligibility

Pell Eligibility	Third Attempts by Pell, Count (#)	Third Attempts by Pell, Percentage (%)	Ivy Tech Students by Pell Percentage (%)
No	3,591	27.8	56.7
Yes	9,339	72.2	43.3
Total	12,930	100%	100%

The cross-tabulation analysis in Table 15 shows that Pell-eligible students had better-than-average success rates and non-Pell-eligible students had a lower-than-average success rate on their third attempts. The Chi-square test results shown in Table 16 show that the association between Pell eligibility and success on a third attempt of a course was statistically significant. However, the effect size measured by the Phi value of 0.031 indicates that the relationship between the two variables is weak.

Table 15: Third Attempt Students by Pell Eligibility vs Third Attempt Success Cross-tabulation

	NO PELL SUCCESS COUNT (#)	NO PELL SUCCESS %	PELL SUCCESS COUNT (#)	PELL SUCCESS %	TOTAL SUCCESS COUNT	TOTAL SUCCESS %
Not Successful	$1{,}424_a$	39.7	$3{,}391_b$	36.3	4,815	37.2
Successful	$2{,}167_a$	60.3	$5{,}948_b$	63.7	8,115	62.8
Total	3,591	100%	9,339	100%	12,930	100%

Note: Each subscript letter denotes a subset of Gender categories whose column proportions do not differ significantly from each other at the .05 level.

Table 16: Third Attempt Students by Pell Eligibility vs Third Attempt Success Chi-Square Tests

	VALUE	DEGREES OF FREEDOM	ASYMPTOTIC SIGNIFICANCE (2-SIDED)
Pearson Chi-Square	12.414a	1	0
Phi	0.031	1	<.001
N of Valid Cases	12,930		

Note: [a] 0 cells (0.0%) have expected count less than 5. The minimum expected count is 1,337.25.

Question 3c: Is there an association between student race or ethnicity and their success on the third attempt of a course?

The data in Table 17 shows that students who identified as White were underrepresented in the third attempt population compared to the total Ivy Tech population by 5.3 percentage points. Students who identified as Black or African American were overrepresented in the third attempt population compared to the total Ivy Tech population by 5.6 percentage points. The rest of the race/ethnicity groups make up a relatively small amount of both populations. However, the Hispanic/Latino and Two or More Races groups are slightly overrepresented in the third attempt population, and there is a higher percentage of students whose race is Unknown in the general student population than in the third-attempt population.

Table 17: Phase One Third Attempt Population and Ivy Tech Population by Race/Ethnicity

	Race/Ethnicity Success Count (#)	Race/Ethnicity Success %	Ivy Tech students by Race/Ethnicity %
White	8,259	63.9	69.2
Black or African American	2,341	18.1	12.5
Hispanic/Latino	793	6.1	4.2
Two or more races	626	4.8	3.7
Unknown or Not Reported	519	4.0	7.7
Asian	314	2.4	2.2
Native American or Islander	78	0.6	0.6
Total	12,930	100%	100%

The percentage of students who successfully completed their third attempt at a course with a C or better is shown in Table 18. Students who identified as Black or African American were 4.8 percentage points less successful on third attempts than students who identified as White. Asian students had the lowest success rate at 56.4% but this was a relatively small group of students in the third-attempt data. The Hispanic and Native American or Pacific Islander groups had below but close to average success. The Chi-square test results shown in Table 19 show that the association between race or ethnicity and success on a third attempt of a course was statistically significant. The Phi value of 0.045 suggests that the association between race or ethnicity and third-attempt success is weak.

Table 18:Third Attempt Students by Race/Ethnicity vs Third Attempt Success Cross-tabulation

		White	Black or African American	Hispanic /Latino	Two or More Races	Unknown or Not Reported	Asian	Native American or Islander
Not Successful	Count	2,956$_a$	951$_b$	309$_{a,b}$	232$_{a,b}$	199$_{a,b}$	137$_{a,b}$	31$_{a,b}$
	% within Race/Ethnicity	35.8%	40.6%	39.0%	37.1%	38.3%	43.6%	39.7%
Successful	Count	5,303$_a$	1,390$_b$	484$_{a,b}$	394$_{a,b}$	320$_{a,b}$	177$_{a,b}$	47$_{a,b}$

		White	Black or African American	Hispanic /Latino	Two or More Races	Unknown or Not Reported	Asian	Native American or Islander
	% within Race/Ethnicity	64.2%	59.4%	62.0%	62.9%	61.7%	56.4%	60.3%

Notes: Values in the same row and subtable not sharing the same subscript are significantly different at p< .05 in the two-sided test of equality for column proportions. Tests assume equal variances.

Table 19: Third Attempt Students by Race/Ethnicity vs Third Attempt Success Chi-Square Tests

	Value	Degrees of Freedom	Asymptotic Significance (2-sided)
Pearson Chi-Square	25.870[a]	6	<.001
Likelihood Ratio	22.664	6	<.001
Cramer's V	0.045	1	<.001
N of Valid Cases	12,930		

Note: [a] 0 cells (0.0%) have expected count less than 5. The minimum expected count is 29.05.

To further explore the relationship between race or ethnicity and success on the third attempt of a course, SPSS was used to calculate the adjusted residuals for the Chi-square test. The results are shown in Table 20 below. The adjusted residuals are analogous to z-scores and were used to calculate a Bonferroni corrected *p* value, listed in the *Adjusted p Value row* of the table. Table 20 shows that the students who identified as White and as Black or African American deviate from the expected success rates in a very statistically significant way. Students who identified as Asian also had a statistically significant difference in success, but this is a small population of students in the data.

Table 20: Third Attempt Students by Race/Ethnicity vs Third Attempt Success Adjusted Residuals

	White	Black or African American	Hispanic /Latino	Two or More Races	Unknown or Not Reported	Asian	Native American or Islander
Successful	64.2%$_{a}$	59.4%	61.0%$_{a,b}$	62.9%$_{a,b}$	61.7%$_{a,b}$	56.4%$_{a,b}$	60.3%$_{a,b}$
Adjusted Residual	4.5	-3.7	-1.0	0.1	-0.5	-2.4	-0.5
Adjusted *p* value	<.001	<.001	0.299	0.925	0.595	0.018	0.646

Table 21 shows the Chi-square and Phi values found by narrowing the Race or Ethnicity categories to the 10,600 cases where students were identified as White and Black or African American. The results are similar to Table 19 with a statistically significant Pearson Chi-square value but a small Phi value which indicates a weak relationship between race and success on the third attempt of a course.

Table 21: White and Black or African American Students vs Third Attempt Success Chi-Square Tests

	Value	Degrees of Freedom	Asymptotic Significance (2-sided)
Pearson Chi-Square	18.302[a]	1	<.001
Phi	-0.042		<.001
N of Valid Cases	10,600		

Note: [a] 0 cells (0.0%) have expected count less than 5. The minimum expected count is 862.86.

Question 3d: Is there an association between student age and their success on the third of a course?

Table 25 shows that the 17-and-Under and 18-19 age groups are underrepresented in the third-attempt data relative to the total Ivy Tech population. Students in the 20-21, 22-24, and 25-29 age groups are overrepresented in the third-attempt data.

Table 22: Phase One Third Attempt Population and Ivy Tech Population by Age Groups

Age Group	Third Attempts by Age, Count (#)	Third Attempts by Age, %	Ivy Tech Students by Age, %
17 and Under	20	0.2	4.2
18 - 19	792	6.1	19.0
20 - 21	2,919	22.6	17.8
22 -24	3,152	24.4	15.1
25 - 29	2,799	21.6	15.5
30 - 39	2,148	16.6	17.0
40 - 49	727	5.6	7.9
50 and Older	373	2.9	3.4
Total	12,930	100%	100%
Traditional (Under 25)	6,883	52.2	56.1
Non-Traditional (25 and Older)	6,047	46.8	43.8
Total	12,930	100%	100%

Because the 17-and-Under population was a very small portion of the third-attempt population, this group was removed from the cross-tabulation analysis. Table 23 shows the success rates by age group. The younger age groups, 18-to-19 and 20-to-21, were less successful than older students. Except for the small number of students in the 50-and-older group, all student groups with ages over the age of 22 had an above-average third-attempt success rate.

Table 23: Third Attempt Students by Age Group vs Third Attempt Success Cross-tabulation

		Age Group						
		18 - 19	20 - 21	22 - 24	25 - 29	30 - 39	40 - 49	50 and Older
Not Successful	Count	384	1,321	1,139	872	700	250	141
	% within Age Group	48.5%	45.3%	36.1%	31.2%	32.6%	34.4%	37.8%
Successful	Count	408	1,598	2,013	1,927	1,448	477	232
	% within Age Group	51.5%	54.7%	63.9%	68.8%	67.4%	65.6%	62.2%

The Chi-square value in Table 24 shows that there is a statistically significant association between the student age group and success on the third attempt of a course. The Phi value in Table 24 indicates a moderate effect size for this relationship.

Table 24: Third Attempt Students by Age Group vs Third Attempt Success Chi-Square Tests

	Value	Degrees of Freedom	Asymptotic Significance (2-sided)
Pearson Chi-Square	191.565[a]	6	<.001
Phi	0.122		<.001
N of Valid Cases	12,910		

Note: [a] 0 cells (0.0%) have expected count less than 5. The minimum expected count is 138.89.

The adjusted residual and corresponding *p values* in Table 25 indicate that the 18-19, 20-21, 25-29, and 30-39 age groups had success rates that were statistically significantly different from the expected value. The 18-19 and 20-21 age groups performed below the average success rate and the 25-29 and 30-39 performed above average.

Table 25: Third Attempt Students Age Group vs Third Attempt Success Adjusted Residuals

	18 - 19	20 - 21	22 - 24	25 - 29	30 - 39	40 - 49	50 AND OLDER
Successful (%)	5.0%	19.7%	24.8%	23.8%	17.9%	5.9%	2.9%
Adjusted Residual	-6.8	-10.2	1.5	7.5	4.9	1.6	-0.2
Adjusted *p* value	<.001	<.001	0.142	<.001	<.001	0.102	0.818

Because educational research often defines traditional aged students as under 25 and, non-traditional as 25 and older, the multiple age groups were further combined to provide information on traditional and non-traditional students and third-attempt course success. The cross-tabulation results are shown in Table 26. Students under 25 had a below-average success rate with 58.6% of students receiving a C or better, and the students 25 and older had an above-average success rate of 67.5%.

Table 26: Third Attempt Students by Age Type vs Third Attempt Success Cross-tabulation

	TRADITIONAL SUCCESS COUNT	TRADITIONAL SUCCESS %	NON-TRADITIONAL SUCCESS COUNT	NON-TRADITIONAL SUCCESS %	TOTAL SUCCESS COUNT	TOTAL SUCCESS %
Not Successful	$2{,}852_a$	41.4	$1{,}963_b$	32.5%	4,815	37.2
Successful	$4{,}031_a$	58.6	$4{,}804_b$	67.5%	8,115	62.8
Total	6,883	100%	6,047	100%	12,930	100%

The Chi-square value in Table 27 indicates that there is a statistically significant association between student age type and success on the third attempt of a course. The Phi value in Table 24 indicates a weak but bordering on moderate effect size for this relationship.

Table 27: Third Attempt Students by Age Type vs Third Attempt Success Chi-Square Tests

	Value	Degrees of Freedom	Asymptotic Significance (2-sided)
Pearson Chi-Square	110.895[a]	1	<.001
Phi	0.093		<.001
N of Valid Cases	12,930		

[a] 0 cells (0.0%) have expected count less than 5. The minimum expected count is 2251.84.

Question 3e: Which demographic characteristics have the most influence on success on the third attempt of a course?

SPSS was used to run a binary regression analysis with gender, Pell eligibility, age type (traditional or non-traditional), and race or ethnicity as the independent variables and student success as the dependent variable. The omnibus Chi-square value in Table 28 indicates that the binary regression model from this data represents a statistically significant improvement over a null model. The Hosmer and Lemeshow test value indicates that there is some evidence that the regression model is a good fit for this data but the small Nagelkerke pseudo R^2 value indicates that the model only explains 1.7% of the variance in the third attempt success outcomes.

Table 28: Binary Regression of Demographic Characteristics vs Success Statistical Model Outputs

	Chi-Square	Degrees of Freedom	Significance
Omnibus Model Test	159.078	9	<.001
Hosmer and Lemeshow Test	5.51	7	0.598
Nagelkerke R^2			0.017

The values in Table 29 show various test results related to statistical significance and the strength of the association between the demographic characteristic variables and third-attempt

success. The larger the value in column B in Table 29 the stronger the relationship is between the independent variable and the dependent variable of success on the third attempt of a course. The results in Table 29 suggests that age type was the strongest indicator of success from these variables. The race or ethnicity categories in this table compare each race category against the success of students who identified as White. The Black or African American category showed the largest variation from the White category, and the Asian category was statistically significantly different from the outcomes for White students but not as large of a difference as the Black or African American students. Gender had a smaller but still statistically significant association with success. Pell eligibility was not found to be a statistically significant contributor to student success in this model.

Table 29: Binary Regression of Demographic Characteristics vs Success Significance and Likelihood Ratios

	B	S.E.	Wald	df	Sig.	Exp(B)	Lower C.I for EXP (B)	Upper C.I for EXP (B)
Gender	0.126	0.037	11.422	1	<.001	1.135	1.054	1.221
Pell Eligibility	0.052	0.044	1.423	1	0.233	1.053	0.967	1.147
Age Type	0.386	0.038	101.626	1	<.001	1.471	1.364	1.585
Race / Ethnicity			36.011	6	<.001			
• Black or African American	-0.28	0.049	32.643	1	<.001	0.756	0.686	0.832
• Hispanic /Latino	-0.1	0.077	1.706	1	0.191	0.905	0.778	1.051
• Two or More Races	-0.064	0.086	0.543	1	0.461	0.938	0.792	1.112
• Unknown	-0.076	0.096	0.629	1	0.428	0.927	0.768	1.119
• Asian	-0.261	0.117	4.98	1	0.026	0.770	0.613	0.969
• Native American or Islander	-0.158	0.234	0.459	1	0.498	0.854	0.540	1.350
Constant	0.293	0.043	47.086	1	<.001	1.341		

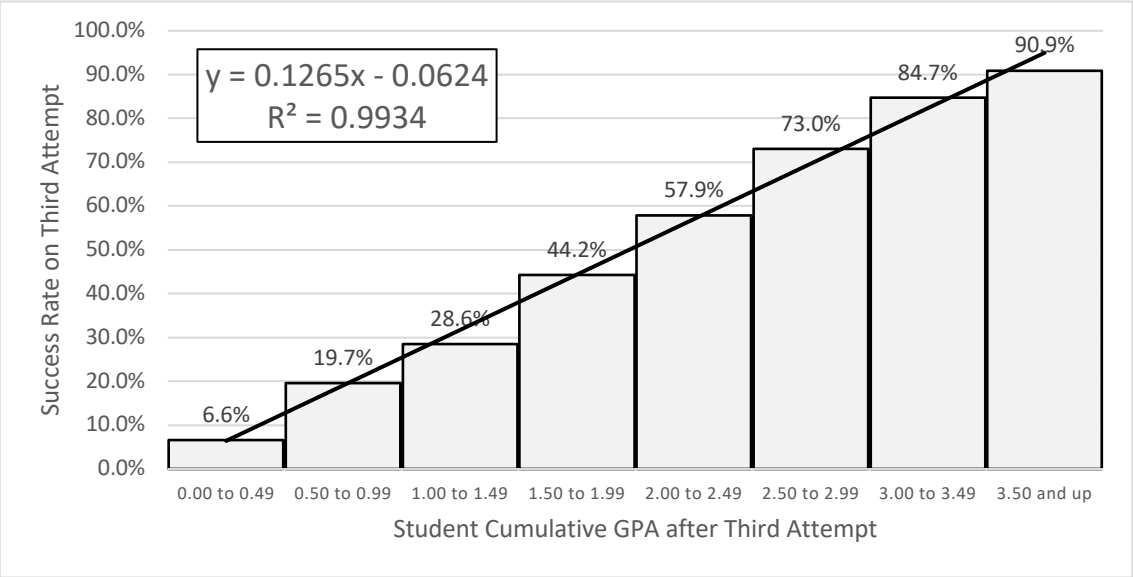
Question 3f: How strong is the correlation between GPA and student success?

Table 30 shows that there were very few students with GPA below 1.50 allowed to take a third attempt at a course. Students who had a GPA below 2.0 after their third attempt had success rates below 50% while students who had GPAs above 2.5 performed better than average on their third attempt. The linear regression and Pearson's r correlation coefficient shown in Figure 1 show a very strong positive correlation between GPA and success on the third attempt of a course with an R^2 value of 0.9934.

Table 30: Third Attempt Students by GPA and GPA vs Third Attempt Success

Cumulative GPA	Third Attempt Population, count (#)	Third Attempt Population, %	Third Attempt Success, Count	Third Attempt Success. %
0.00 to 0.49	274	2.1	18	6.6
0.50 to 0.99	356	2.8	70	19.7
1.00 to 1.49	753	5.8	215	28.6
1.50 to 1.99	1,542	11.9	682	44.2
2.00 to 2.49	3,587	27.7	2078	57.9
2.50 to 2.99	3,602	27.9	2630	73.0
3.00 to 3.49	2,231	17.3	1890	84.7
3.50 and up	585	4.5	532	90.9
Total	12,930	100%	8115	62.8%

Figure 1: Third Attempt Student Cumulative GPA vs Success on Third Attempt Linear Regression



Research Question 3: Discussion of Findings

When considering the relationships between student characteristics and student success on the third attempt of a course, gender, Pell eligibility, race or ethnicity, and age all showed statistically significant but weak associations with success. This suggests that while there are differences in success based on these student demographic characteristics, there are other factors besides these characteristics that impact success. Out of the demographic characteristics, the strongest association with success on a third attempt was age.

Similar to the national community college population, Ivy Tech enrolls more female than male students (Leukhina & Smaldone, 2022). Students who identified as female were even more overrepresented at 65.7% of the third-attempt population. The third-attempt data appears to be skewed towards the overrepresentation of female students due to the large

proportion of female students in courses like APHY and MATH123 that are required for students in healthcare programs. Like national community college completion rates (Causey et al., 2022, p. 3), Ivy Tech's third-attempt students who identified as female were slightly more successful than their male counterparts.

Pell-eligible students outperformed non-Pell students but the association with Pell eligibility and success on a third attempt was weak. There appeared to be a large overrepresentation of Pell students in the third-attempt data with 72.2% of third-attempt students being Pell eligible versus 43.3% of the general Ivy Tech population. Some of the students in the third-attempt data had lost their Pell eligibility as evidenced by duplicate lines for these students in an initial data pull (one line yes for Pell and one duplicate line for no). After an adjustment to the data collection settings, only the 'yes' lines were included in the data to capture that the student was Pell eligible at some point during the third-attempt process.

The third-attempt success rate for Pell-eligible students was 3.4 percentage points higher than for non-Pell students. These findings are comparable to the Sung-Woo et al. (2013) study, which suggested that Pell students were more likely to be academically unprepared but tend to have a strong academic focus (Sung-Woo et al., 2013). The Pell-eligible students in this study appear to be more likely to need a third attempt but were also more likely to be successful. The financial benefits of Pell as well as the motivation to stay Pell eligible may explain both the larger representation of Pell students and the higher success rates for Pell students in the third-attempt data.

Similar to the study by Adelman (2006), where minority students were more likely to withdraw or repeat courses, the third-attempt data showed an overrepresentation of minority students enrolled in third attempts relative to the college's general population. The underperformance of minority students on their third attempt mirrors the racial gaps in college completion found by Causey et al. (2022) and in the study by Adelman (2006). The most concerning result in comparing the third-attempt outcomes by race in this study was for Black or African American students. This group was the largest non-White racial group in the third-attempt data and had a success rate almost five percentage points lower than white students. In contrast to national college completion data where Asian students have higher than average completion rates (Causey et al., 2022), students who identified as Asian in the Ivy Tech data had lower-than-average success on their third attempts. However, the population of Asian students in the third-attempt data was relatively small, 2.2% of students, making it difficult to make any meaningful conclusions about this population. The students who identified as Hispanic/Latino, Two Races, Unknown, or Native all had third-attempt success rates relatively close to the average.

It was not surprising to find that third-attempt students in the youngest age groups were underrepresented relative to the Ivy Tech population, since it would take some time for a student to reach a third attempt. It was unexpected to find any students in the 17-and-Under age group since Dual Credit students were excluded from the data, but these 20 students only represented 0.2% of the third-attempt data. Out of the student demographic characteristics, age had the strongest association with success. Students under the age of 22 were less successful than older students, suggesting that maturity may have a positive effect on student

success on a third attempt. The age group recorded for each student represents that student's age at the time of the third attempt, so it is not known at what age the student entered college or how long they have been continuously enrolled to reach the third attempt. The national six-year completion rate for community college students is tracked by the student's age at entrance, making it difficult to make a direct comparison to results in this study. The national college completion rate for younger traditional-aged students is higher than for older students, but the completion rate for students between ages 20 and 24 was lower than the rates for students aged older than 24 (Causey et al., 2022, p.7). There are likely additional student characteristics or external reasons for students to delay college entry such as needing to work or lack of a clear academic goal that are part of these completion rate differences. Similarly, with the third-attempt data, age is one factor to be considered in whether to recommend a third attempt for a student.

There was a strong correlation between GPA and success on a third attempt. However, the GPA value provided in the data included the outcome for the third attempt course itself, meaning the average would be artificially increased or decreased depending on the outcome. The number of credit hours completed was not included in the data provided, so it is unclear how severely including the third attempt grade results in the GPA value skews these results. Previous studies showed positive past academic performance was a strong predictor of future academic success (Pascarella and Terenzini (2005), Craig and Ward (2008), Armstrong and Biktimirov (2013). When a third-attempt student's GPA was 2.50 or higher, they were more likely than average to earn a C or better on their third attempt.

PHASE TWO: QUALITATIVE DATA RESULTS AND ANALYSIS

Findings and Analysis Research Question 4: *What do students identify as the most common obstacles to successful course completion, and how do these obstacles impact success on their third attempt?*

Question 4a: What were the most commonly identified issues that students reported as obstacles to success in their previous attempts?

The student responses to why they were unsuccessful in previous attempts were coded via thematic analysis and the results were tabulated using Excel. The results are listed in Table 31 below. The bolded rows of the table represent the umbrella categories of Student Characteristics, External Environment, and Organizational Characteristics which are based on the components of the Braxton, Hirschy, and McClendon theory of student persistence in commuter colleges and universities (Braxton et al., 2004).

Note that each student may have reported multiple obstacles to success, and some categories may be related. For example, time management issues may be related to a student's work or family responsibilities. Out of the 103 student-reported obstacles, 70 were classified as Student Characteristic issues, and 74 were classified as External Environment factors. Only 31 of the forms noted obstacles that were attributed to Organizational Characteristics.

The most commonly reported issue fell under Time Management (36.9%). About one-third (32%) of students attributed their previous challenges to issues with Academic Preparedness. More than one-fifth of students stated they had challenges due to Family Issues (31.1%), Mental Health (31.1%), Work (29.1%), or Physical Health (21.4%). The most commonly reported obstacle in the Organizational Characteristics was issues with taking classes in an

Online Modality (18.4%), followed by taking Too Many Courses at Once (11.7%). All other categories were reported in less than 10% of the forms.

Table 31: Student-Reported Obstacles to Success on Previous Course Attempts

	Total Number of Responses	Percentage of Responses
Student Characteristics	70	68.0%
• Time Management	38	36.9
• Academic Preparedness	33	32.0
• Motivation	10	9.7
• Disability Needs	7	6.8
External Environment	74	71.2%
• Family Issue	32	31.1
• Mental Health	32	31.1
• Work	30	29.1
• Physical Health	22	21.4
• COVID Modality Change	10	9.7
• Financial	5	4.9
Organizational Characteristics	31	30.1%
• Online/modality	19	18.4
• Too Many Courses at Once	12	11.7
• 8-week	6	5.8
• Poor Instructor	3	2.9
Total Forms	103	

Question 4: How do the issues that students identified as obstacles to success on previous attempts relate to their success on their third attempt of the course?

The total number of students who were successful on their third attempt for each of the obstacle categories and the percentage of successes based on the total number of students who identified that obstacle is listed in Table 32. The student success rate on the third attempt of a course for the Phase Two data was 72.8%, which is ten percentage points higher than the 62.8% success rate found from analyzing the Phase One statewide data. The Phase Two outcomes will be measured against the 72.8% success rate from this data set.

All ten of the students who reported motivation issues on their previous attempts and all five students who reported financial issues were successful in their third attempt. Only 65.8% of students who cited time management issues on their previous attempts were successful on their third attempt. Students who reported mental or physical health issues were less successful than average for this population of students. Students who cited issues with the COVID modality change, 8-week course structure, or poor instructions on their previous attempts were also less successful than average for this population.

The categories that had higher-than-average third-attempt success rates were Motivation (100%), Financial (100%), Disability Needs (85.7%), Online Modality of Course (84.2%), and Taking Too Many Courses at Once (83.3%).

Table 32: Student-Reported Obstacles to Success on Previous Course Attempts versus Success on the Third Attempt of Course

	Total Number of Successes	Total Number of Responses	Percentage of Successes by Category
Total Phase Two Students	75	103	72.8%
Student Characteristics	53	70	75.7%
• Time Management	25	38	65.8
• Academic Preparedness	24	33	72.7
• Motivation	10	10	100.0
• Disability Needs	6	7	85.7
External Environment	54	74	73.0%
• Family Issue	24	32	75.0
• Mental Health	21	32	65.6
• Work	22	30	73.3
• Physical Health	11	22	50.0
• COVID Modality Change	6	10	60.0
• Financial	5	5	100
Organizational Characteristics	25	31	80.6%
• Online/modality	16	19	84.2
• Too Many Courses	10	12	83.3
• 8-week	4	6	66.7
• Poor Instructor	2	3	66.7

Research Question 4: Discussion of Findings

To determine the common obstacles to student success, 103 third-attempt request forms from Ivy Tech Lafayette were analyzed using qualitative methods. The student appeal form studied in Phase Two is an open-response form in which the first question asks students

why they were unsuccessful on their previous attempts. Students gave varying amounts of detail about the challenges they had on their prior attempts. During the process of coding student responses, multiple categories could be marked for each student. The minimum number of categories recorded for an individual student was one, the most was six, and the average was three. Further analysis did not reveal any correlation between the number of issues reported and success on the third attempt.

The qualitative analysis showed that the majority of third-attempt students ascribed their previous course failures to their own characteristics or environmental challenges, rather than challenges due to organizational issues. However, the student's goal in filling out the form is to receive permission from the college to take the course again. Therefore, the student may have avoided placing blame on the college in an attempt to gain favor with those reviewing their appeal. The success rates associated with the umbrella categories are not particularly revealing as the success averages are above the overall average success of 72.8% for this set of data. This is partially due to student statements falling into multiple categories.

The categories associated with the lowest average success rates all fell under the External Environment umbrella of challenges. The persistence theories of Bean and Metzner (1985) and Braxton, Hirschy, and McClendon (2004) describe the interplay between external threats, the student's characteristics, and the organization's characteristics (Bean & Metzner, 1985; Braxton et al., 2004). These theories suggest that external challenges can be overcome if there is adequate compensation from other areas, like extra support from the organization or a high level of self-efficacy from the student. Students who reported physical health issues on their form had the lowest success rate (50%). Some students chose not to give details about

their physical illnesses, but examples from those that did include COVID-related illness, cancer, or long-term disabilities. Because the forms submitted in Phase Two of this study were submitted between spring 2021 and summer 2023, some students reported being impacted by the COVID shutdown. Ten students included the challenges of taking classes during the COVID-related shutdown in their responses, and only six of these students received a C or better on their third attempt. However, three of the four unsuccessful students in the COVID-related category describe other major obstacles like mental health or physical illnesses. Almost one-third of the 103 forms included statements about mental health. The responses that were categorized as Mental Health challenges included anxiety, depression, bipolar disease, and PTSD. The success rate on the third attempt for students who described challenges with mental health was 65.6%. Students with obstacles related to physical health, or mental health appear to be at the most risk on their third attempt.

Another area with a low success rate was Time Management (65.8%), which was classified as a Student Characteristic category in this research. Further analysis of the 38 responses in this category showed that some of these students described challenges with procrastination, but two-thirds of these students also had challenges classified in the external environment. Two students described taking classes at both Ivy Tech and Purdue University and working. Seven students reported challenges in managing time for school around work schedules. More than half (56%) reported falling behind in coursework due to physical or mental health. Time management, therefore, may not have been a lack of personal management skills due to a student characteristic, but the inability to overcome the cumulative effect of multiple external challenges.

The challenges that fell under Organizational Characteristics that had lower than average success rates were taking classes in the eight-week format and issues with an instructor. However, these categories only had a handful of affected students each. Only six students attributed earlier failures to taking eight-week versions of the course. All six of these students were enrolled in a 16-week course for their third attempt. Four received a C or better on the third attempt but two of the six failed despite the longer course length. Similarly, two of the three students who reported they had issues with a poor instructor on previous attempts received a C and one received a D.

Research has shown that working too many hours is detrimental to college completion (Dadgar, 2012; Carnevale & Smith, 2018). Of the 30 third-attempt students who reported that their work had interfered with their previous attempts, 73.3% were able to earn a C or better on their third attempt, which is slightly above the average success rate for this set of students. Of the eight work-issue students who were not successful, three-fourths were retaking a math course, which had overall lower third-attempt course success rates in the Phase One data.

Surprisingly, only about one-third of students cited academic preparedness as the cause of their earlier failures. Students may have thought it wasn't necessary to state that they were academically challenged, or they may have believed writing that they had academic challenges would reduce their chances of receiving a third attempt. The 33 students who described Academic Preparedness challenges had a close-to-average success rate of 72.7%.

Three-quarters of the 32 students who reported Family Issues were successful on their third attempt. The Family Issues described by students included childcare issues, being a

caretaker for a family member, illness in the family, and death(s) in the family. Nine of these 32 students included more than one challenge due to family issues.

The students who had reported they were unsuccessful on earlier attempts due to Motivation, Disability Needs, Financial, Online Modality of Course, and Too Many Courses all had third-attempt success rates higher than 80%. Perhaps, in part, due to these issues being resolved before taking the third attempt. The approval of a student's third attempt can be contingent on the modality of the course and/or a limit on the student's number of credit hours.

Ninety of the 103 forms had responses that fell under more than one category of challenges. Therefore, it is difficult to attribute student success to changes in just one of the reported areas. The results of the Phase Two analysis of why students were unsuccessful in their previous attempts suggest that challenges that are difficult for the student to change are also the most difficult to overcome. Students with physical illnesses, or mental health challenges on previous attempts had below-average success rates on their third attempt. Surprisingly, students who reported previous challenges with work or academic preparedness had about average success rates. The challenges that stemmed from organizational issues that appear to be the easiest to overcome were taking too many courses and taking courses in an online format. These results align with the theories of Bean and Metzner (1985) and Braxton, Hirschy, and McClendon (2004) which posit that students can overcome challenges in one area by compensating with support from other areas, but there is a limit to how many challenges one student can overcome.

Findings and Analysis Research Question 5: *What resources are most helpful to students repeating a course for the third time?*

Question 5a: What were the most common reasons students identified as to why they believed they would be successful on their third attempt?

The results from the student third-attempt appeal form analysis for *Why* students said they would be successful on their third attempt were tabulated and are listed in Table 37 below. The majority (53.4%) of students described examples of their academic success as evidence that they deserved a chance at a third attempt, and close to half (49.5%) described their motivation(s) for successfully completing the course. Around 40% of students explained changes that had occurred since their previous attempts that they believed would help them be successful. A smaller number of students noted a high level of confidence that they would be successful if granted a third attempt, and others noted that a long time had passed since their earlier attempts. Each student could have statements in more than one of these categories. The coding of student statements resulted in individual students belonging to zero to four of the categories listed in Table 33.

Table 33: Student-Reported Reasons for Success on a Third Attempt

	TOTAL NUMBER OF RESPONSES	PERCENTAGE OF RESPONSES
Proven Success	55	53.4
Motivation	51	49.5
Life Change/Improved	41	39.8
Confidence	17	16.5
Length of Time Since Repeat	11	10.7
Total Forms	103	

Question 5: How do the common reasons students identified as to why they believed they would be successful on their third attempt relate to their success on their third attempt of the course?

The total number of students who were successful on their third attempt for each of the reason-for-success categories and the percentage of successes based on the total number of students who identified each of the reasons they would be successful is listed in Table 34.

Due to the student responses being coded into multiple categories or no categories, all of the success rates appear higher than the 72.8% average for this portion of the analysis. There were twelve students whose responses did not fit into any of these categories. Further analysis showed that these twelve students were slightly less successful, with two-thirds receiving a C or better on their third attempt. All eleven students who noted the long length of time since their previous attempts were successful. The responses coded as Life Changes included student statements about changes in family, health, or work situations. The students with Life Changes fared about average in this set of data with 73.2% receiving a C or better.

Table 34: Student-Reported Reasons for Success on a Third Attempt versus Success on Third Attempt of Course

	Total Number of Successes	Total Number of Responses	Percentage of Successes by Category
Proven Success	13	55	76.5
Motivation	39	51	76.5
Life Change/Improved	30	41	73.2
Confidence	43	17	78.2
Length of Time Since Repeat	11	11	100.0
Total Forms	75	103	72.9

Question 5c: What were the most common strategies for success that students and advisors reported they would use on their third attempt?

The results from the student third-attempt appeal form analysis for what strategies students and advisors said would help the student be successful on their third attempt were tabulated and are listed in Table 35 below. The information coded for this question may come from the student's open response to what they will do to be successful on their third attempt or from their advisor's recommendations on the form.

The most popular strategy reported was for the student to meet with a tutor during their third attempt, with 60.2% of the forms mentioning tutoring in some way. Close to half (48.5%) of the forms recommend regular check-ins with an advisor and about one-third (34%) mention meeting with the instructor.

Since time management and taking too many courses were common obstacles to student success in earlier attempts, 52.4% of appeal forms mentioned restricting the number of credit hours while taking a third attempt. Almost half (48.5%) of the students mentioned increasing the amount of time they will spend on studying, and 19.4% noted the importance of attending class for success. There were 24 students who reported they would use a calendar or planner to keep track of important due dates and events in their courses.

Thirty-one forms mentioned taking the third attempt in a better modality, typically recommending the class be taken in person, and there were 12 that recommended taking the class in a 16-week, rather than 8-week, format. Four students said they planned to work with a mentor during their third attempt.

Table 35: Proposed Strategies for Success on Third Attempt of Course

Strategies	Total Number of Responses	Percentage of Responses
Meet with Tutor	62	60.2
Restrict Credit Hours	54	52.4
Meet with Advisor	50	48.5
Increase Time Studying	50	48.5
Meet with Instructor	35	34.0
Better Modality	31	30.1
Use Calendar/Planning	24	23.3
Attend Class	20	19.4
Take in 16 Week Format	12	11.7
Work with Mentor	4	3.9
Total	103	

Question 5d: How do the strategies that students and advisors identified relate to their success on their third attempt of the course?

The strategy with the best outcome on a third attempt was working with a mentor, with all four of these students receiving a C or better on their third attempt. The next most successful strategy was to increase the time spent studying, with 80 percent of these 50 students succeeding on their third attempt. The students who said they would meet with their instructor had a 77.1% success rate. The strategy of meeting regularly with their advisor only had average success relative to this data set, with 72% of those students earning a C or better. The success rate for those who mentioned the use of tutoring on their appeal form was 69.4% and the success rate for those who said they would attend class regularly was 70%.

The recommendations of limiting credit hours, using a calendar, and taking the third attempt in a 16-week format all had below-average success rates. Two-thirds of students with the limited credit hour strategy had a successful third attempt. Only 62.5% of students who mentioned using a calendar or planner were successful on their third attempt, and only 58.3% of students who planned to take the course in a 16-week class were successful.

Table 36: Strategies for Success on Third Attempt versus Success on Third Attempt of Course

Strategies	Total Number of Successes	Total Number of Responses	Percentage of Successes by Category
Meet with Tutor	43	62	69.4
Restrict Credit Hours	36	54	66.7
Meet with Advisor	36	50	72.0
Increase Time Studying	40	50	80.0
Meet with Instructor	27	35	77.1
Better Modality	22	31	71.0
Use Calendar/Planning	15	24	62.5
Attend Class	14	20	70.0
Take in 16 Week Format	7	12	58.3
Work with Mentor	4	4	100
Total	75	103	72.8%

Research Question 5: Discussion of Findings

To determine what resources were most helpful to students repeating a course for the third time, student responses to how they would ensure success along with their advisor's recommendations were analyzed using qualitative methods. Once the categories for reasons for success and strategies for third-attempt success were determined, the success rate for each category was calculated. The strategies identified were often related to the challenges students described in previous attempts, limiting their transferability of results to all students. Because

the forms analyzed for Phase Two of this study are part of the appeal process that students complete before taking their third attempt, it is not known how faithfully students used the strategies described.

There were eleven students with forms that reported several years had passed since their previous attempts, and these students or their advisors believed the student could now successfully pass the course. Further research showed that the time from the second attempt to the third attempt for these students ranged from two to thirteen years. Ten of these eleven students earned an A or B on their third attempt, and one earned a C. This echoes the results in Phase One that showed older, possibly more mature students had higher success rates on their third attempt.

The four students who mentioned working with a mentor on their third attempt successfully completed the course. One of the references to mentors was for the specific program the student was enrolled in, one was in reference to working with a colleague who had recently graduated, and the two others referred to other outside support. While this was a very successful strategy, it would be difficult to scale up for use by all students.

Students who said they would increase their time studying on their third attempt had an 80% success rate. This may be reflective of their commitment to success on their third attempt and willingness to make changes.

Further analysis showed that 21 of the 30 students who reported work as an obstacle to previous course success explicitly stated that they had changed jobs or would work less hours. Only one student stated they would not be working at all. Of the students who reported they would make changes to their work or work schedules during their third attempt, 15 of 21

received a C or better, and 17 of 21 received a D or better. This is a close to average success rate for this set of data. Prior scholarly research showed that working fewer hours was associated with increased course and college completion (Carnevale & Smith, 2018; Dadgar, 2012; Shapiro et al., 2017). The majority of students who cited work as an obstacle were able to make the needed changes to pass their third attempt of a course, but balancing work-school commitments is likely part of the challenges that students described as time management issues in the earlier question on the form. Recall that students who reported time management issues had a lower-than-average success rate.

The strategies that involved attending class regularly, meeting with a tutor, restricting the number of credit hours, and using a calendar or planner were all associated with lower-than-average third-attempt success rates. While these are all good advice in general, other than the credit hour restriction, it is difficult to know if students followed through with these strategies. Similarly, the strategies of meeting regularly with their advisor, and taking the third attempt in a better modality resulted in slightly below-average success on the third attempt. If students did not follow through with these strategies or recommendations, it may have had a negative impact on their academic success.

CHAPTER SUMMARY AND KEY FINDINGS

This chapter provided the results, findings, analysis, and discussion for this mixed methods study. The analysis of the Phase One quantitative data and the Phase Two qualitative data allowed the researcher to answer this study's five primary research questions.

The first question asked in this study was, "How successful are students on the third attempt of a course?". Analysis of the 12,930 third attempts in the Phase One data showed that

62.8% of students received a C or better and 71.6% received a D or better on their third attempt. A grade of C or better is considered a success because students will be able to use this credit for an Ivy Tech degree or certificate completion, the result can be used to meet a prerequisite for other courses, and it is likely to be accepted for transfer credit at other colleges. A grade of D or better is considered a completion because it can also be used as credit towards an Ivy Tech degree or certificate, but it cannot be used as a prerequisite, and it is not likely to be useful as transfer credit at another institution.

Next, the most commonly repeated courses were determined, and student success by course was measured. The majority of third attempts were in gateway courses needed for degree completion. Third attempts constitute less than 5% of the student population enrolled in any given course. The most repeated course was ENGL111, an introductory English Composition course, which comprised 18.4% of the data. All math courses put together made up 21.6% of the third attempts. The math courses had third-attempt success rates that were significantly below the average third-attempt success rate, and third-attempt students were less successful in these courses than the statewide enrolled population for these courses. The math courses, the ENGL111, and COMM101 courses had FW rates over 14%, meaning students failed and did not participate in the final event in the course, despite knowing this was their third and final attempt allowed. The anatomy and physiology courses, APHY101 and APHY102, were also commonly repeated courses, making up 13.7% of the data. Third-attempt students performed better than average in the APHY courses, likely because these are prerequisite courses for healthcare programs that favor students who receive higher grades in APHY. The Introduction to Psychology, PSYC101, Fundamentals of Public Speaking, COMM101, and

Student Success, IVYT111, courses are common Ivy Tech degree requirements and had a high occurrence of third attempts, but students performed better than average on their third attempt in these courses.

The Phase One data included student demographic information based on gender, race, Pell eligibility, and age. The student's cumulative GPA for the semester in which the third attempt was completed was also included in the data. All of the demographic characteristics showed statistically significant but weak associations with third-attempt success. Out of the third-attempt student characteristics, age showed the strongest association with success, with students over the age of 22 performing better than younger students. Students in minority race groups were overrepresented in the third-attempt data and performed worse than students who identified as White or Two or More Races. However, only the results for Black and Asian students showed a significant difference in success compared to White students. Pell-eligible students were very overrepresented in the third-attempt data and performed slightly better than non-eligible students on their third attempt. Students who identified as female were overrepresented in the third attempt data and performed better than male students on their third attempt. While the association between GPA and third-attempt success had a strong correlation, the usefulness of this outcome is limited due to the results of the third-attempt grade's inclusion in the GPA value. The data still suggests that students with a GPA of 2.50 or above will perform better than average on their third attempt.

To determine the most common obstacles to successful course completion, student third-attempt appeal forms were reviewed. The 103 third-attempt appeal forms analyzed for Phase Two of this study showed that most students attributed their lack of success in previous

course attempts to multiple issues. Students were more likely to cite issues that could be categorized as student characteristics or challenges with external factors rather than issues with the college itself. The most commonly described issues faced in previous course attempts included challenges with time management, academic preparedness, family issues, issues with mental health, working too many hours, and physical health issues. Students who reported physical health, or mental health issues were less likely to be successful on their third attempt than the other students in the Phase Two data. Students who cited the course modality changes due to the COVID shutdown, and students who reported time management issues were also less successful on their third attempt, but many of these students also reported issues stemming from physical or mental health. Students were more likely to be successful on their third attempt if their challenges stemmed from obstacles that could be more easily overcome like reducing the number of hours worked, reducing the number of classes taken, taking classes in a different modality, etc.

To determine what resources would be most helpful to students repeating a course for the third time, the third-attempt appeal forms were also used to compare students' responses to why/how they would be successful on their third attempt with their third-attempt outcomes. Students who noted that a long time had passed since their previous attempts, and students who worked with a mentor were all successful on their third attempt. Students who wrote that they would increase their time studying on their third attempt were more successful than average. Students who said they would attend class regularly, meet with a tutor, restrict their number of credit hours, or use a calendar for time management were all less successful on average.

The next chapter will provide additional interpretation and implications of these findings, along with recommendations for third-attempt policies, and future research.

CHAPTER FIVE: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

INTRODUCTION

This mixed methods study sought to analyze both the factors that cause students to repeat courses and the characteristics of students associated with success when attempting a class for the third time at a large community college system. Quantitative analysis of statewide data was used to determine the scope of the third-attempt issues, which courses were commonly repeated, and the success rates of students on their third attempt. The statewide data was also used to compare student success based on various demographic characteristics. A qualitative analysis of regional campus third-attempt appeal forms was used to determine what challenges students faced on previous course attempts and how they planned to be successful on their third attempt. The third-attempt success rates for each of the resulting obstacle and strategy categories from the qualitative analysis were used to analyze which factors and strategies had the best or worst outcomes.

This study adds to the literature on repeating college courses. Since successfully completing courses is key to degree completion, this study also provides insight into the challenges community college students face while working towards their degrees. This chapter discusses implications of the findings, recommendations on course-repeat policies, and suggestions for further research.

LIMITATIONS OF THIS STUDY

This study was limited to non-dual credit Ivy Tech Community College students who had taken a course for the third time. This population was of interest because Ivy Tech's third-attempt policy requires students to appeal to receive a third and final attempt on a course. Because the population and policy studied are college-specific, the applicability of the findings to other populations may be limited.

The population studied in Phase Two was restricted to one regional campus of Ivy Tech Community College, further restricting the transferability of results to other populations. The appeal form analyzed in Phase Two of this study was not designed for research. The form was open response and only captured the issues that students chose to share, and the researcher did not contact students for clarification or expansion of student statements. The student responses on the appeal form may not be reliable as they may have made statements that were less than truthful in order to receive permission to take a course for the third time. Specifically, students may have misrepresented what they would do to ensure success in their third attempt.

CONTRIBUTION TO RESEARCH

First and foremost, this study provides important data and analysis for Ivy Tech Community College about its third-attempt students. This study will help Ivy Tech in its goal to make data-driven policy decisions, which aligns with the AACC's (2012) recommendation for institutions to foster a culture of evidence over anecdotes.

The qualitative portion of this study analyzed 12,930 lines of data for 10,431 students, but this study on course repetition is not as large as the studies by Adelman (2006) and VanZile-

Tamsen (2011) (Adelman, 2006; Vanzile-Tamsen, 2011). These earlier studies were both quantitative and focused on four-year college students, while this study expands the literature by studying a population of community college students. The smaller studies by Armstrong and Biktimirov (2013) and Snead, Walker, and Loch (2022) were focused on specific programs at Canadian and Australian universities respectively (Armstrong & Biktimirov, 2013; Snead et al., 2022). The prior studies were all quantitative in nature. This study expands on the existing work by providing qualitative data, which were called for in both the Adelman (2006) and Armstrong and Biktimirov (2013) studies.

This study expanded on research in both college completion and course repetition. Similar to earlier studies, this study found a strong correlation between student GPA and academic success (Pascarella and Terenzini (2005), Craig and Ward (2008), Armstrong and Biktimirov (2013). This study found evidence of underperformance on third attempts for students who identified as Black or African American, similar to the findings in Adelman (2006) and Causey (2022) (Adelman, 2006; Causey et al., 2022). Unlike the Armstrong and Biktimirov (2013) study, this study did not statistically analyze the time between attempts, but there was evidence in the Phase Two data that students who had several semesters or years between their second and third attempt were more likely to be successful (Armstrong & Biktimirov, 2013). The researcher was surprised to find the high level of overrepresentation of Pell-eligible students taking a third attempt and that these students performed better than non-Pell students. The outcomes for third-attempt Pell students align somewhat with the findings in Sung-Woo et al. (2013) which showed Pell students are less academically prepared but more focused, and Yuen (2019) which showed mixed outcomes depending on part-time or full-time

status of Pell students (Sung-Woo et al., 2013; Yuen, 2019). While national data indicates older students have lower college completion rates, student age in this study had the strongest association with third-attempt success with students older than 22 performing better than younger students (Causey et al., 2022).

The qualitative portion of this study expanded on the course repetition studies and research on college persistence. The obstacles to success on previous attempts that were described on the third-attempt appeal forms fell primarily under what Braxton et. al. would describe as external factors (Braxton et al., 2004). When comparing third-attempt student statements on prior obstacles, current plans for success, and success rates, there is evidence to support the persistence theories of both Bean and Metzner (1985) and Braxton, Hirschy, and McClendon (2004) in terms of the compensatory effects of intrinsic and extrinsic support that result in success or failure for students (Bean & Metzner, 1985; Braxton et al., 2004). The third attempt appeal process could be viewed as part of what Tinto (1993) describes as academic integration, where students perceive their academic goals as being supported by the college (Tinto, 1993).

INTERPRETATIONS AND IMPLICATIONS OF THE FINDINGS

Ivy Tech had almost 13,000 cases of third attempts over a five-year period. While it is concerning that over 10,000 students needed to take a class, or multiple classes, for a third time, there is a silver lining. These students persisted at the college for multiple semesters, worked with an advisor to appeal for a third attempt, registered for the third attempt, and started their third attempt, which shows how committed these students were to completing a degree. The majority of students (62.8%) earned a C or better on their third attempt, and even

more (71.6%) completed the course with a D or better. It is difficult to know what happens to the students who were not successful on their third attempt. Depending on the necessity of the course being repeated, students who are not successful may be able to complete a certificate but not a degree, they may be able to take a different course, they may transfer the rest of their credits to another institution, or they may drop out of college completely. It is also difficult to know how many students chose not to pursue a third attempt after they were not successful on their second attempt.

It was not surprising that the list of commonly repeated courses was comprised of gateway courses that are required for program completion. Math is often considered a barrier to degree completion. Multiple math courses were in the commonly repeated courses and the success rates for third-attempt students in the math courses were worse than average. Only about half of students completed their third attempt of a math course with a C or better. The anatomy and physiology courses may have higher third-attempt success rates due to students in competitive programs retaking the courses to increase their grades, rather than retaking due to previous failures. The portion of third-attempt students in any given course was relatively low. This study estimates that less than 5% of students enrolled in any given course are taking a class for the third time. This data will be shared with the college and disseminated to the curriculum committees for further discussion. The faculty for the commonly repeated courses can work with their curriculum committees to consider appropriate interventions in these courses to raise student awareness of the consequences of failure/withdrawal on earlier attempts to avoid needing a third attempt.

The outcomes of the demographic analyses showed weak associations with success. Statistical analysis did show some groups were disproportionately impacted by course repetition or were less successful on third attempts, but their characteristics (age, race, gender, Pell eligibility) were not strong predictors of success or failure on their third attempt. This suggests that the college's treatment of students is fairly equal. When comparing third-attempt student success by race, the largest statistical difference was between students who identified as Black or African American and White students. The underperformance of Black or African American students on third attempts may contribute to lower completion rates for these students and should be an area of concern. Pell-eligible students were very overrepresented in the third-attempt data. Pell eligibility was included in this study as a measure of socioeconomic status with the expectation that these students might perform worse than other students, but Pell students in this study outperformed non-Pell eligible students by 3.4 percentage points. Support from Pell Grant money may allow students to retake courses and be more successful when doing so. Age had the strongest association with third-attempt success, with students over 22 years of age performing better than younger students. This may be due to maturity or life changes that these older students have made. Not surprisingly, students with lower cumulative GPAs performed worse than students with higher GPAs. Students with GPAs of 2.50 or higher performed better than average. The information provided here will be especially useful for advisors. Advisors may consider this information when helping students determine the number of credit hours to take, and what support these students have when taking the most repeated courses.

The analysis of the third-attempt appeal forms revealed that students often face multiple obstacles to success in their courses, and many of these obstacles are not academic in nature. Students who reported physical and mental health challenges were the least likely to be successful on their third attempt. Students who had multiple commitments outside of the college and cited issues with managing college on top of those commitments were also less likely to be successful. The students who made life changes, stated they were confident they would succeed, and/or took accountability for their actions on previous attempts were more likely to be successful. The strategies that are often recommended for third-attempt students like working with a tutor, meeting with their advisor, taking fewer credit hours, and taking the course in 16 weeks (rather than 8 weeks) had worse than average success rates. The changes in external factors and students' attitudes prior to their third attempt appear to be more significant than the changes that students propose they will make during their third attempt.

This study provides data-driven evidence for the anecdotal evidence provided to the researcher by experienced advisors and college administrators who have worked with third-attempt students. Students who demonstrated academic improvement, made positive life changes, and exhibited a clear commitment to success were more likely to receive approval and achieve success on their third attempt. The college is aware that external factors are often a barrier to success and has increased wrap-around services to students since the pandemic. Ivy Tech's IvyCares program connects students with emergency transportation assistance, food security, mental health resources, technology assistance, and emergency aid funding. The third-attempt form analysis revealed one-third of students had challenges related to mental health suggesting this should be an area of continued focus.

RECOMMENDATIONS FOR THIRD ATTEMPT POLICIES

Similar to the historic conundrum of community college access versus success arguments, there are pros and cons to limiting course attempts. If the college strictly limits students to three attempts, students who are not successful on the third attempt may be forced out of the college, which negatively impacts the student and the college. However, if students were allowed to repeat multiple times without holding them accountable, they might never commit to making the changes needed to succeed in the course. Some limits or policies on course repetition are necessary to prevent students from depleting their financial aid resources. The current appeal process encourages students to reflect on why they were not successful and what they may do differently next time. Requiring students to meet with their advisor, and in some cases, the Dean of their program of study, shows students that the college takes their success seriously and provides an opportunity for these students to receive advice and support. Since the number of students who require a third attempt is relatively low, and the majority of students are successful on their third attempt, the researcher recommends maintaining the status quo of requiring third-attempt appeals with some additional recommendations.

The college should raise awareness about the three-attempt limit. Students are often not aware that withdrawals count as attempts. Faculty, including adjunct faculty, should be cautious in recommending withdrawals for this reason. Contacting repeating students during the first week of their second attempt at a class to inform them that they must either withdraw from the course before the refund date or commit to being successful could be helpful in reducing the number of third attempts.

There is evidence that maturity and length of time between the second and third attempt are associated with student success on their third attempt. The researcher recommends a statute of limitations on counting previous attempts against a student. A student's life, attitudes, and behaviors are likely to change significantly over five or ten years. While the academic officer who approves the third attempt may already take such information into consideration, codifying such a limitation could allow returning students a fourth attempt or could expedite the third attempt appeal for all parties involved.

The college could also choose to allow additional attempts but prohibit the use of financial aid on attempts beyond the second or third attempt, forcing the student to pay out of pocket. This would protect the student from exceeding the number of credits that financial aid will cover while providing financial motivation to be successful in the course with fewer attempts.

RECOMMENDATIONS FOR FUTURE RESEARCH

Within the college, continued longitudinal data collection is needed to monitor the prevalence of third attempts. This monitoring should include tracking of which courses are commonly repeated and their success rates. This study did not include course modality as a variable, but this is another area of interest, as some students attributed prior course failures due to taking classes online or virtually. The students' grades on their previous course attempts were included in this study's datasets but were not analyzed due to the complexity of recoding the information into a useful format and the complication of two prior grade attempts to be considered as inputs. The researcher hypothesizes that students with D's and W's on earlier attempts would fare better than those with F's or FW's. The Phase One data for this study did

not include the student's primary program code (major), but this is another area that would be helpful to monitor and potentially create program-specific interventions.

The reliability and completeness of students' statements on the third-attempt appeal forms analyzed in Phase Two limit this data's usefulness. Especially in terms of measuring which resources were helpful for students on their third attempt, since the form only indicates what students said they would do, not what they actually did. The researcher had originally planned for a Phase Three portion of this study that would collect information from students during their third attempt via interviews. Permission to interview students was approved but only two students sat for interviews in the first semester and another two that had agreed to meet never came to their appointments. Switching to a survey format garnered ten additional responses over two semesters but the data appeared to be skewed towards successful students. The students most willing and able to meet for interviews or complete surveys were all very positive and motivated and were successful in their third attempts. Since little additional data was gained from Phase Three and due to time constraints, it was decided to focus on completing Phases One and Two of this study. However, an experimental research approach to study students taking a class for the third time in which intrusive advising or a mentor program is applied could be an area of interest for both future research and the college.

The most difficult but intriguing question for both the third-attempt students and student persistence research is what happens to students who are not successful or who drop out. It is difficult to connect with students once they have left the college. Are students taking their credits to another college? Are students leaving college completely? IPEDS data collection added information about students who transfer and complete at other institutions starting with

the 2015-2016 cohort of students, but this is an area where additional research at the institution level would be useful. If Ivy Tech learned that students who failed on their third attempt are transferring elsewhere or dropping out of college, it could be an incentive to reconsider the hard limit on three attempts.

CONCLUSION

College completion is an important issue for students, colleges, and the community at large. Education opens doors to gainful employment and upward mobility. To complete a degree or certificate students must first successfully complete key courses. This study considered the factors that impact student success or failure on their third and final attempt of a course in a large community college system. The mixed methods design of this study provided an analysis of third-attempt student success based on both quantitative data and qualitative data. Studying this single aspect of the completion issue expanded on the existing research on course repetition, college completion, and student persistence. While this study was limited to one institution with a specific third-attempt policy, the data gained from student statements regarding obstacles to success in their courses can provide insights for faculty, advisors, and administrators at all community colleges.

This study found that less than 5% of students enrolled in any course were taking the class for the third and final time, and 62.8% of students received a C or better on their third attempt. However, there is room for improvement, especially in success in the math courses, success for younger students, and outcomes for Black or African American students. Analysis of student responses to why they were not successful on previous attempts indicated that time management, academic preparedness, family issues, and mental health challenges were

common obstacles to success. The students who indicated prior challenges with mental or physical health had worse outcomes on their third attempt, suggesting that these challenges were the most difficult to overcome.

The study's outcomes do not merit suggestions for sweeping changes to the college's third attempt policy, but there are small ways that the policies could be adjusted. A statute of limitations for the number of years that a prior attempt is counted would help older returning students. Raising awareness and providing interventions on students' second attempt could reduce third attempts.

There are many opportunities for related research like studying the third attempts by student program, analyzing the time between second and third attempts against success, and comparing third-attempt outcomes based on the prior grades earned. Experimental research on interventions like mentor programs or intrusive advising could provide opportunities for grant-based research.

Similar to research on college completion, the multiple factors that impact course success are complicated and intertwined with each other. Continued research and support are needed for continued improvement.

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APPENDIX A: APPLICATION FOR THIRD ATTEMPT AT COURSE COMPLETION

Ivy Tech Community College-Lafayette

APPEAL to Repeat Course

IMPORTANT INFORMATION REGARDING A STUDENT'S APPEAL:

- Students only need to request permission to take a course after their second attempt.
- Approval for a third attempt is only for the specified term.
- Students, with the review of program advisors, may attempt to improve B, C, D, or F grades.
- It is the responsibility of the student to check with financial aid to determine eligibility for third attempts.
- When a course is repeated, all grades remain on the official transcript, although only the highest grade will count in the GPA.

Course information: _____ _____Modality Preference:
Course Number Course Name

Term Information:

_____ _____
Year *C#*

Fall ____ Spring _____ Summer _____

_____ _____ _____
Full Name *Cell Phone Number* *Ivy Tech Email Address*

Please explain why you were unsuccessful in your first attempts:

Please list strategies you will utilize to ensure success in this attempt:

Attach physical documentation of extenuating circumstances here: *(optional)*

By signing this form, I affirm the following statements:

- I am giving permission to my course instructor to release information regarding class participation, attendance, and grades to my academic advisor.
- I understand that the committee decision is final for this term. I may do another appeal for a later term *(if applicable)*.
- I understand that if I receive financial aid, it is my responsibility to speak with a financial aid official regarding adding this class. Laf-finaid@ivytech.edu
- If approved, I will work with my Academic Advisor to register for the course.
- I understand that I may be approved with conditions and that I must follow those stipulations as they are outlined.

_____ _____

Student Signature *Date*

APPENDIX B: IRB APPROVAL LETTERS

Notice of IRB Determination
Ivy Tech Community College of Indiana
Institutional Review Board

Study Title: Third Attempt Research
Protocol Number: 21027
Principal Investigator: Rebecca Wulf
IRB Reviewer: Tim Kish
Date of Determination: 6/16/2022
Expiration Date: 6/16/2024
Type of Review:
☒ Initial Review
☐ Requested Re-review
☐ Other
IRB Determination:
☒ Exempt
☐ Does not qualify as research under 45 CFR §46.102(l)
☒ Meets Exempt category under 45 CFR §46.104(d)
☐ Category 1: Research conducted in established or commonly accepted educational settings involving normal educational practices that are not likely to adversely impact students' opportunity to learn required educational content or the assessment of educators who provide instruction.
☐ Category 2: Research that only includes the use of educational tests, survey procedures, interview procedures, or observation of public behavior, and at least one of the criteria in 46.104(d)(2)(i)-(iii) is met.
☐ Category 3: Research involving benign behavioral interventions in conjunction with the collection of information from an adult subject through verbal or written responses (including data entry) or audiovisual recording if the subject prospectively agrees to the intervention and information collection and at least one of the criteria in 46.104(d)(3)(i)(A)-(C) is met.
☒ Category 4: Secondary research for which consent is not required: secondary research uses of identifiable private information or identiable biospecimens, and at least one of the criteria in 46.104(d)(4)(i)-(iv) is met.
☐ Category 5: Research or demonstration projects that are conducted or supported by a Federal department or agency, or otherwise subject to the approval of department or agency heads, and that are designed to study, evaluate, improve, or otherwise examine public benefit or service programs; procedures for obtaining benefits or services; possible changes in or alternatives to programs or procedures; possible changes in methods or levels of payment
☐ Category 6: Taste and food quality evaluation and consumer acceptance studies that meet criteria under 46.104(d)(6)(i) or (ii).
☐ Category 7: Storage or maintenance for secondary research for which broad consent is required: Storage or maintenance of identifiable private information or identifiable biospecimens for potential secondary research use if an IRB conducts a limited IRB review and makes determinations required by 46.111(a)(8).
☐ Category 8: Secondary research for which broad consent is required: Research involving the use of identifiable private information or biospecimens for secondary research use, and meets the criteria listed in 46.104(d)(8)(i)-(iii).

IRB Review Type

☒ Exempt
☐ Expedited Review
☐ Full Review

IRB Review Result

☒ Approved via Exempt Process
☐ Approved via Board Review
☐ Denied

Review Notes

Your IRB Review for the referenced study Protocol Number 21028 has been passed via exempt category 4. All proper documentation applicable to the study has been provided. Research for this part of the study will only involve secondary research and no active subjects.

Please make note of the following:

- This notification should be retained for your records.
- Please note that IRB approval does not include Ivy Tech's endorsement to conduct the study. **The investigator is expected to pursue separate approval from a member of Ivy Tech's staff at an appropriate level of local or statewide leadership relevant to the area of study to receive appropriate endorsement before contacting participants.** Nor does approval obligate faculty or students to participate or assist in your study, per standard definitions of consent.
- Note that it is the sole responsibility of the Principal Investigator to recruit subjects for the study. While the PI may request assistance in subject recruitment from other Ivy Tech faculty or staff, the faculty and staff have no responsibility to assist in the recruitment, and any assistance is voluntary.
- If the protocol changes in a way such that the basis for approval is no longer accurate, and may no longer conform to the criteria for approval, a new Initial Review application will need to be submitted. Investigators should contact the IRB office via email prior to making changes in order to confirm that the status will not be affected.
- **Study expiration:** the IRB determination expiration date is listed on page 1 of this document. Should you need more time to complete your research, it is your responsibility as the Principal Investigator to submit a request for continuing review 4 weeks prior to the date of expiration in order to avoid a lapse in IRB approval.
- Investigators are expected to be guided by the ethical principles for all research involving humans as subjects, set forth in the report of the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research (the "Belmont Report"). For a copy of the Belmont Report, see http://www.hhs.gov/ohrp/humansubjects/guidance/belmont.htm.
- Please review the Ivy Tech IRB policy (https://www.ivytech.edu/files/IRB-Policy.pdf) for more information.

Please contact Tim Kish at tkish1@ivytech.edu with any questions.

Tim Kish
Senior Data Strategist and IRB Representative

FERRIS STATE UNIVERSITY

INSTITUTIONAL REVIEW BOARD
1010 Campus Drive FLITE 410 Big Rapids, MI 49307
www.ferris.edu/irb

Date: November 30, 2022

To: Susan DeCamillis, EdD and Rebecca Wulf
From: David R. White, Ph.D, IRB Chair
Re: IRB Application for Review, IRB-FY22-23-1, Ivy Tech Community College of Indiana IRB #21027 & #21033

A reliance agreement has been put in place between the Ferris State IRB and Ivy Tech Community College of Indiana IRB which governs this study, *Factors of Success and Failure for Students Repeating a Course for the Third Time*. **Ferris State IRB is relying upon the approval determinations of Ivy Tech Community College of Indiana IRB which determined project #21027, *Third Attempt Research*, Exempt 4 on 6/16/2022 and project #21033, *Phase 3: A Study of Factors Contributing to the Success of Students Repeating a Course for the Third Time*, Exempt 2 on 7/20/2022**. It is your responsibility to ensure and inform the FSU IRB that all necessary institutional permissions are obtained from Ivy Tech Community College of Indiana IRB and that all policies are met prior to beginning the project, such as documentation of institutional or department support and that where appropriate. Approval applies only to the activities described in the protocol submission; should revisions need to be made, all materials must be approved by Ivy Tech Community College of Indiana IRB prior to initiation and submitted to Ferris IRB for our records. In addition, each IRB must be made aware of any serious and unexpected and/or unanticipated adverse events as well as complaints and non-compliance issues.

You are required to submit an annual status report during the life of the research project and a Final Report Form upon study completion. **The Annual Status Report for this project is due on or before July 20, 2024.** Thank you for your compliance with these guidelines and best wishes for a successful research endeavor.

Regards,

David R. White, Ph.D, IRB Chair
Ferris State University Institutional Review Board