

A comparative study of african american and white students success rates at community colleges
that have embraced guided pathways

by

Nahla Baaqi

B.S., Central Michigan University, 2007
M.A., Central Michigan University, 2013

AN ABSTRACT OF A DISSERTATION

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Abstract

This quantitative comparative study examined whether there was a significant difference in success rates between African American and White students at community colleges that have embraced guided pathways. Two Midwest American Association of Community Colleges (AACC) Pathways Project colleges participated in this study. AACC Pathways Project is a national project dedicated to improving student success rates by assisting colleges in building the capacity to design and implement guided pathways on a large scale (AACC, 2019). Four key performance indicators (KPIs) were examined in this study: 1) students earning six or more college credits in the first term, 2) completion of gateway math and English in the first year, 3) persistence from fall to spring, and 4) college-level course completion rates in the student's first academic year. This study used secondary data to examine differences in success rates between African American and White students. The research design was based on a non-experimental quantitative design using de-identified student unit-level data from two Midwest AACC Pathways Project community colleges. The population in this study was the first-time college student cohort for those students who were enrolled for the first time in college for the fall 2017, 2018, and 2019 terms at community colleges in the AACC Pathways Project. The sample included students enrolled in two Midwest community colleges affiliated with the AACC Pathways Project. To determine significant differences in KPIs 1-3 by race, the researcher used Pearson's Chi-Square statistical test in R statistical programming. To determine significant differences in KPI 4 by race, the researcher used a Welch two-sample t-test. The results from the study showed that White students performed statistically significantly better than African American students on all KPIs except for persistence from fall to spring for academic years 2018 and 2019 at both colleges. Even though the African American students had a lower percentage of

persisting in 2018 and 2019 than the White students, who had a higher percentage of persisting, both groups performed about the same with the number of students from each cohort within this KPI for years 2018 and 2019. Conducting this study assisted in knowing if guided pathways impacted student success outcomes of African American learners.

Keywords: Guided Pathways, African American students, key performance indicators, early momentum metrics, community college

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Co-Major Professor
Dr. Jerry Johnson

Approved by:

Co-Major Professor
Dr. Donna Jovanovich Monse

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Chapter 1 - Introduction

The research that points to improving community college success rates is considered to be the framework of guided pathways. Guided pathways is an integrated, institution-wide approach to student success. It is based on intentionally designed, clear, coherent, and structured educational experiences that guide each student from their point of entry to attaining a high-quality postsecondary credential and career with value in the labor market (AACC, 2019). However, since the implementation of guided pathways, community colleges are still facing challenges in completing their students where they graduate with a certificate or degree. Then when the data is disaggregated by race, African American students continue to lag behind White students (Bailey, 2018). Guided pathways is one strategy to improve student success rates, but there is still limited research on its impact on African American student outcomes (Kubler, 2018). African American students' low educational attainment rates lead to a constant performance gap between African American and White students (Bohanon, 2017). The African American and White achievement gap has often been studied, but its relationship to guided pathways has generally not been explored.

After several years of community college completion reforms, compelling evidence has emerged on what works to help more students persist and succeed. A substantial amount of community colleges are beginning to see significant improvements in student outcomes by redesigning programs and services to improve the student experience along four dimensions: (1) Clarify the Paths, (2) Help Students Get on Path, (3) Help Students Stay on their Path, and (4) Ensure Students are Learning (AACC, 2019). These four dimensions derive from the guided pathways model. One of the leading national pathway initiatives, the American Association of Community Colleges Pathways Project, defines guided pathways as an integrated, institution-

wide approach to student success (AACC, 2019). The guided pathway model takes additional steps inside and outside the classroom to ensure students are learning (Bailey et al., 2015a). The guided pathways model embodies an intensive effort to “coordinate classroom learning, administrative duties, and student services to support and empower students” (AACC, 2019). In addition to the four dimensions in guided pathways, several early outcomes or key performance indicators (KPIs) are measured within the model, which include (1) the number of college credits earned in the student's first term and first year, (2) completion of gateway math and English courses in the students first year, (3) number of college credits earned in the program of study in the student's first year, (4) persistence from term 1 to term 2, (5) rates of college-level course completion in students first academic year, and (6) examining equity in all key performance indicators (AACC, 2019).

According to Jenkins and Bailey (2017), examining KPIs early can predict long-term success in how institutions can improve student outcomes and close equity gaps. There is growing evidence that exploring credit momentum, gateway course momentum, persistence momentum, and program momentum metrics are leading indicators of improving student completion rates over a longer term and assisting with closing equity gaps (CCRC, 2017). The three areas of credit momentum, gateway course momentum, and persistence momentum are relatively short metrics to examine. Still, according to the research, they can assist colleges in improving student success outcomes (Jenkins & Bailey, 2017).

The premise of this study was to examine KPIs from colleges under the direction of the American Association of Community Colleges (AACC) Pathways Project to determine if there were significant differences in student success rates by race. AACC Pathways Project is a national project dedicated to improving student success rates by assisting colleges in building the

capacity to design and implement guided pathways on a large scale (AACC, 2019). Even though the AACC Pathways Project concluded in 2019, it was still essential to examine the outcomes of African American students in the model since most community colleges continue to embrace guided pathways to improve student outcomes. For this study, KPIs were defined as 1) students earning six or more college credits in the first term, 2) completion of gateway math and English in the first year, 3) persistence from fall to spring, and 4) college-level course completion rates in student's first academic year.

Background of the Problem

According to the Hechinger Report (2013), less than one out of five students at community colleges obtain their desired degree in three years or less. The National Center for Education Statistics (NCES) revealed low program completion rates at community colleges in the United States for students enrolled in two-year public institutions indicating that only “13% of community college students graduate in two years” (NCES, 2021, p.13). In the same report, “within three years, approximately 22% of students graduate, and within four years, the rate stands at 28%” (NCES, 2021, p. 13). Despite the low completion rates of students enrolling in community college, African Americans are among the minority groups that record lower completion rates compared to White students (Levesque, 2018). According to national statistics on college graduation rates by race, African American students completed college at a low rate of 42%, 20 percentage points less than the 62% rate for White students. (Levesque, 2018). According to the National Student Clearinghouse Research Center (NSC) (2022), White and Asian students graduated at similar rates, 51.2% and 49.7%. While Hispanic and African American students graduated 36.8% and 30.1% (NSC, 2022). This data included the fall 2015

cohort of first-time, part-time, and full-time public community college students nationwide for six-year completion rates.

According to a study conducted by the American Institutes for Research (AIR) and Abel and Deitz (2014), students dropping out of college costs the students and the economy a great deal (Dwyer, 2011). Between the students that dropped out and the economy, there was “at least \$4.5 billion in lost earnings and federal and state income tax revenue every year” (Dwyer, 2011). In the study, AIR discovered approximately 1.1 million students started college in 2002, and nearly 500,000 failed to complete it within six years (Dwyer, 2011). Because these students did not complete, they “lost approximately \$3.8 billion in income in 2010 alone” (Dwyer, 2011). According to the study, this same group of students “would probably generate \$566 million in federal income tax revenue, while states would probably collect more than \$164 million in state income taxes” (Dwyer, 2011).

Furthermore, according to the research, the economic impact of college dropouts does not stop at income and tax revenue; it impacts student loan defaulting (Abel & Deitz, 2014; Dwyer, 2011). For example, if a student attends college, takes out a student loan, and then drops out of college, they may be unable to repay it. These students probably find it challenging to repay their student loan debt without the rise in income from a college degree, placing themselves in default and further harming our economy (Abel & Deitz, 2014; Dwyer, 2011). Also, the research showed that people without a college degree acquire higher employment rates and are more likely to require government-provided assistance, which taxpayers must support (Dwyer, 2011). Lastly, the multiplier effect suggested by the AIR study indicated that if “40% of every class of freshmen do not finish their degrees, the economic impact on the nation will undeniably stagger”

(Dwyer, 2011). The numerous initiatives to persuade students to enroll in college are worthwhile, but the AIR study demonstrates the need for additional emphasis on ensuring students graduate.

In addition to low community college graduation rates, persistence, and retention rates show a racial gap in success outcomes between African American and White students (Bailey, 2018; JBHE, 2016). When the data is disaggregated by race and ethnicity, African American students persisted at a lower rate than their White pupils (Bailey, 2018; JBHE, 2016). According to the Journal of Blacks in Higher Education (JBHE), (2016), there remains a significant difference in success rates between African American and White students. The overall persistence rate for White students at all post-secondary colleges was 78% (JBHE, 2016). The persistence rate for African American students was 66% (JBHE, 2016). The retention rate for White students was 62%, compared to the retention rate for African American students of 52% (JBHE, 2016). These outcomes mean that only half of all African American “students who entered college in the fall of 2017 returned to the same institution in the fall of 2018” (JBHE, 2016). When the data was reviewed at community colleges from the National Student Clearinghouse, persistence, and retention rates were far lower (JBHE, 2016). For White students, the “persistence rate was 67%, compared to 55%” for African American students (JBHE, 2016). The White students at community colleges had a retention rate of 49% (JBHE, 2016). The retention rate for African American students was 42% (JBHE, 2016). The National Student Clearinghouse figures published in the Journal of Black Higher Education showed there is still work to be done by higher education institutions to bridge the achievement gap between African American and White students. In higher education, one of the significant challenges is closing equity gaps between minority and White students (Bailey, 2018). “Historically underrepresented groups often attend colleges where they are less likely to graduate. African American, Hispanic,

first-generation, and low-income students are disproportionately represented at community colleges and open-access four-year colleges, where graduation rates are commonly below 50 percent” (Bailey, 2018).

According to the National Student Clearinghouse Research Center (2018), not only are African American students’ completion rates low, but this population also has subpar persistence and retention rates compared to White students. In 2018, the National Student Clearinghouse Research Center reported on “first-year student persistence and retention by race and ethnicity for fall 2016 cohort, in all sectors at the national level,” which indicated that among students who entered college in fall 2016, the White students ranked second with persistence at 79% with 63% returning to the starting institution and 16% returning to an institution other than the starting institution in fall 2017 (NSC, 2018). While African American students had the lowest persistence rate at 67%, just over half of African American students returned to the starting institution at 52%, and an additional 14% returned to an institution other than the starting institution (NSC, 2018).

As low success rates continue in community colleges, researchers suggested it is attributed to “structural barriers, including disconnected courses, unclear program requirements, advising services that are difficult to access, and lengthy developmental education sequences that themselves enroll disproportionate numbers of students of color and low-income students” (Bailey, 2018). In addition to these challenges, community college students typically possess fewer outside resources available to help them navigate college, but guided pathways are supposed to help mitigate these concerns.

Another problem is that many community college students never earn a degree, which is a reason for concern with policymakers and institutional leaders (Attewell et al., 2012).

Additionally, many states eliminated or significantly reduced developmental education in the past decade, despite more than half of community college students taking at least one remedial course historically (Attewell et al., 2012). Further, underserved and underrepresented students often were given the choice of attending their local community college or not pursuing a higher education degree at all (Venezia & Jaeger, 2013).

States such as Florida, Ohio, and Tennessee are attempting to respond to policymakers' concerns about the low success rates of community colleges by implementing broad, outcomes-based funding models that evaluate colleges on factors such as retention and graduation rates (Rand, 2016). State legislators were no longer interested in enrollment alone and called on community colleges to make better use of the tax revenues granted to them and to produce graduates at rates similar to their four-year counterparts, despite serving drastically different populations of students (Belfield, Crosta, & Jenkins, 2014). “Even educational think tanks joined the chorus of those calling for a change. The Lumina Foundation now advocates for moving away from simple enrollment-based funding toward a system of outcomes-based funding” (Rand, 2016). Also, the Obama Administration’s 2013 creation of the “College Scorecard” gave the general public knowledge of community colleges' low retention and graduation rates (AACC, 2016). Now, more than ever before, in the history of America’s community colleges, institutions must look within and make critical, across-the-board changes to remain competitive in the new educational landscape.

Another vital issue community colleges face related to improving student success rates is the students they serve. Community college students often encounter several situational challenges, such as family and professional obligations, inconsistent work schedules, and reliance on financial aid, and these are all factors that research has shown have negatively

correlated with retention and graduation (Attewell et al., 2012). Moreover, Bailey (2016) found that because community college students are more likely to be first-generation, from low-income households, or racial/ethnic minorities, they are less able to rely upon previous experiences of their inner circles to successfully traverse the postsecondary landscape (Bailey, 2016; Scott-Clayton, 2011).

To tackle the low success rates in community colleges, educators are interested in implementing a solution to improve overall student outcomes. Major educational foundations and think tanks joined the fight to provide guidance, funding, and policy suggestions (Pakowski III, 2019, p.10). Yet, the needle has moved only marginally, much to the disappointment of legislators and other policymakers. Guided pathways is attempting to improve student outcomes and present a genuinely assertive opportunity to lead transformational change at community colleges nationwide. However, work still needs to be done to improve student success rates at community colleges. With added attention from policymakers, there has never been more pressure to improve completion. The American Association of Community Colleges is attempting to remedy completion rates by assisting institutions to implement guided pathways at scale through their Pathways Project. The Pathways Project might be a solution that can be adapted at the institutional level to improve student outcomes. However, the data demonstrates that African American student outcomes still lag behind White students. There is still limited data on the outcomes of these students within the guided pathways model (Bailey, 2018).

Statement of the Problem

Community colleges have the potential to provide students across the nation with practical pathways to decent employment opportunities. However, many students who enroll in community colleges do not complete a certificate or degree. Specifically, fewer than 40% of

community college students earn a certificate or degree within six years of enrollment (Bailey et al., 2015a). Individuals who do not complete a certificate (also called a credential) beyond a high school diploma face dramatically reduced earning potential (Belfield & Bailey, 2015). Low success and completion rates are an urgent problem for millions of Americans seeking a pathway into the middle class and employers reliant on a skilled and educated workforce (Bohanon, 2017).

Guided pathways has been employed in over 300 community colleges in the United States and claims to break down barriers for underrepresented minorities and attempt to improve overall success rates (Bailey, 2018; Jenkins et al., 2019). While various models of guided pathways has been around for more than a decade, the push for broader implementation has mostly occurred over the last five years, which limits how much we know about the model's success (Kubler, 2018). "If the benefits of guided pathways is skewed toward the former group (White students), then the latter group (African American students) risks not seeing academic improvements, which points to the need for comprehensive data collection and analysis in guided pathways reforms" (Kubler, 2018). The African American and White achievement gap has often been studied, but its relationship to guided pathways has generally not been explored.

However, since guided pathways reforms are relatively new, their full potential has yet to be determined. African American students are still falling through the pipeline and not reaching the same academic standards and achievements as their counterparts (Bailey, 2018). Even though guided pathways are implemented at most colleges and seeing progress in most students, colleges committed to equity cannot assume these strategies close gaps in outcomes (Bailey, 2018). These are complex reforms, and there is still much that is unknown about the impacts of the countless changes in organizational practice and culture in the model (Bakersfield College,

n.d.). Community colleges must know who their students are and “shift from programs in equity to equity within the college structure of guided pathways which in turn achieve racial equity” (Bakersfield College, n.d.).

Purpose of the Study

The purpose of this quantitative comparative study was to examine whether there was a significant difference in success rates between African American and White students at community colleges that have embraced guided pathways. Success rates were measured by four KPIs. These KPIs were students 1) earning six or more college credits in the first term, 2) completing gateway math and English in the first year, 3) persistence from fall to spring, and 4) college-level course completion rates in students' first academic year. The researcher interchangeably used student success rates and the selected KPIs. Student success rates were the four measurable KPIs chosen for this study.

In this study, the researcher selected three Midwest colleges from the thirty community colleges affiliated with the AACC Pathways Project. These institutions were given pseudonyms to protect their identity. Two were urban, and one was a rural college. Institutions under the direction of the AACC Pathways Project received grant funding by annually reporting data to the Community College Research Center (CCRC) on the college's KPIs in four broad areas; early momentum college credits earned, completion of gateway math, and English courses, persistence, and college-level course completion (AACC, 2017). Pathways Project Colleges report this data to establish a baseline and then monitor student progress as work proceeds on designing and implementing pathways at scale (AACC, 2017).

The cohort for this study was the fall cohort for terms 2017, 2018, and 2019; for students first-time enrolled in college. Secondary de-identified student unit-level data was requested from

the three Midwest AACC Pathways Project Colleges. This data consisted of (a) fall and spring terms in academic years consisting of 2017-18, 2018-19, and 2019-20, (b) KPIs in the following four areas: 1) earning six or more college credits in the first term, 2) completion of gateway math and English in the first year, 3) persistence from fall to spring, 4) and college-level course completion rates in student's first academic year), and lastly, (c) race. Conducting this study assisted in knowing if guided pathways impacted student success outcomes of African American learners.

Research Questions

The following research questions and hypotheses guided this research study.

- R1. Is there a significant difference in students earning six or more college credits in the first term by race?
 - H1. There is a statistically significant difference in students earning six or more college credits in the first term by race.
- R2. Is there a significant difference in gateway math and English completion in students' first academic year by race?
 - H1. There is a significant difference in gateway math and English completion in students' first academic year by race.
- R3. Is there a significant difference in student persistence from fall to spring by race?
 - H1. There is a significant difference in student persistence from fall to spring by race.
- R4. Is there a significant difference in college-level course completion rates in students' first academic year by race?
 - H1. There is a significant difference in college-level course completion rates in students' first academic year by race

Research Design

To answer these research questions and hypotheses, a quantitative comparative design using secondary data was utilized to examine differences in success rates based on race. This design was appropriate for the researcher to measure the dependent variable in two or more groups while not manipulating the independent variable (Drummond et al., 2023). The research design was based on a non-experimental quantitative design using de-identified, student unit-level data from three Midwest AACC Pathways Project community colleges.

Significance of the Study

The significance of the study is that it can benefit African American student learners to determine areas of improvement if there was a significant difference in success rates between African American and White students. The results from this study on examining achievement gaps by race within guided pathways can improve practice in guided pathways on how institutions are promoting equity in outcomes by race and assist institutions on how to better serve African American students within the model. The study, lastly, provides a basis for further research on guided pathways by examining differences in KPIs based on race.

Conceptual Framework

The conceptual framework applicable to this study is guided pathways adopted by Bailey et al. (2015a) and the American Association of Community Colleges. The guided pathways model is appropriate for this study because it is a framework for student success. For this study, the researcher focused on significant differences in success rates of African American and White students from colleges that embraced guided pathways. Guided pathways has demonstrated that structured, well-defined pathways may be one of the solutions, to improve student outcomes and increase countless more college graduates in our society (Scott-Clayton, 2011). The literature has

shown that guided pathways enhances the rate at which students attend community college, offer students a framework to enroll full-time, and encourages students to register for adequate classes to complete in two years (Edgecombe, 2011; Hoachlander et al., 2003; Jones, 2015). By making navigation, far less difficult through guided pathways, this model removes the need for students to learn by trial and error (Grubb, 2006; Jaggars & Fletcher, 2014). Another benefit of guided pathways is the model connects colleges with their K-12 constituencies in new ways to ensure a cohesive student experience and a smoother transition to college (Conley, 2003; Venezia & Jaeger, 2013).

The guided pathways framework has decades of research in several disciplines, informing suggested reforms rooted in research and theories both from within the higher education community and outside of it. According to the American Association of Community Colleges, guided pathways is designed to “construct coherent, structured pathways to certificate and degree completion” (AACC, 2019). The conceptual framework of guided pathways “aims to incorporate high-impact, evidence-based practices; integrate student support with instruction; promoting implementation at scale; rigorously evaluating the effectiveness of programs and services for students; and courageously end ineffective practices” (Bailey et al., 2015a). In essence, guided pathways has restructured each part of the student’s experience, from the point of entry to exit, while cohesively incorporating student support services.

Guided pathways is an “integrated, instructional-wide approach to student success” (O’Banion, 2019, p. 85). Guided pathways focuses on redesigning academic advising and planning, mapping programs with jobs, creating meta-majors, increasing engagement with faculty through professional development on student success outcomes, and creating a holistic approach to student assessment through continuous evaluation of a guided pathways model

implemented at pathway colleges (Jenkins, 2014). Guided pathways has four dimensions. The four dimensions consists of (1) Clarify the Paths, (2) Help Students Get on Path, (3) Help Students Stay on their Path, and (4) Ensure Students are Learning (AACC, 2019). Within each dimension, the following are applicable essential practices:

1. Clarify the Paths

- Simplify students' choices with default program maps developed by faculty and advisors that show students a clear pathway to completion, further education, and employment in fields of importance to the region.
- Establish transfer pathways by aligning pathway courses and expected learning outcomes with transfer institutions to optimize the applicability of community college credits to university majors (AACC, 2019).

2. Help Students Get on Path

- Bridge K-12 to higher education by assuring early remediation in the final year of high school by applying courseware technology in strong K-12/higher education partnerships, such as the TN SAILS model.
- Redesign traditional remediation as an “on-ramp” to a program of study, which helps students explore academic and career options from the beginning of their college experience, aligns math and other foundation skills coursework with a student's program of study, and integrates and contextualizes instruction to build academic and nonacademic foundation skills throughout the college-level curriculum, particularly in program “gateway” courses.
- Provide accelerated remediation to help poorly prepared students succeed in college-level courses as soon as possible (AACC, 2019).

3. Help Students Stay on their Path

- Support students through a robust advising process, embedded and ongoing in the pathway experience and supported by appropriate technology, to help students make informed choices, strengthen clarity about transfer and career opportunities at the end of their chosen college path, ensure they develop an academic plan with predictable schedules, monitor their progress, and intervene when they go off track.
- Embed academic and non-academic support throughout students' programs to promote student learning and persistence (AACC, 2019).

4. Ensure Students are Learning

- Establish program-level learning outcomes aligned with the requirements for success in employment and further education in a given field and apply the results of learning outcomes assessment to improve the effectiveness of instruction across programs.
- Integrate group projects, internships, and other applied learning experiences to enhance instruction and student success in courses across programs of study.
- Ensure incorporation of effective teaching practice throughout the pathways (AACC, 2018)

According to AACC (2019), research and experts in the field indicate that the following capacities are essential for motivating and supporting higher education institutions and systems to undertake broad-scale institutional reforms in implementing guided pathways effectively and at scale. These factors support why guided pathways is a conceptual framework for this study.

The following capacities continue to improve student success outcomes in community colleges and should be applied to create a student-centered culture to increase success rates.

- Leadership demonstrating skills for managing and sustaining large-scale transformational change.
- Broad and authentic engagement of college faculty and staff—particularly advisors—in the design, implementation, evaluation, and ongoing improvement of student pathways. Institutional will and capacity to use data and evidence to design academic and career pathways, monitor student progress, and implement needed improvements over time.
- Technological tools and infrastructure appropriate to support student progress through guided pathways.
- Commitment to the level of strategically targeted professional development required to design and implement pathways at scale.
- Policy conditions established at the state, governing board, system, and institutional level provide incentives, structures, and support for pathway design and implementation at scale while removing barriers.
- A continuing action research agenda that examines the efficacy of guided pathways and develops practical knowledge and tools to support effective implementation at scale. (AACC, 2018)

The guided pathways framework assisted the researcher in conducting this study by allowing the researcher to examine the success outcomes of the African American and White students inside the AACC Pathways Project. The framework also helped the researcher identify if the model was progressing toward improving African American success rates in community

colleges by examining significant differences in KPIs by race and supporting the researcher's ability to explain the results in this study.

Limitations

There were three limitations in this study. The first one was limited to three Midwest AACC Pathways Project Colleges selected in this study; Country College, Capital Community College, and Community College of East Coast. Thirty colleges were under the direction of the AACC Pathways Project, but the researcher only selected these three institutions due to the researcher being able to acquire the needed secondary data to conduct this study. The second limitation was from the Community College of East Coast because the researcher received incomplete data to complete the statistical tests needed to retrieve accurate results. The third limitation was the four KPIs the researcher identified in this study which were 1) earning six or more college credits in the first term, 2) completion of gateway math and English in the first year, 3) persistence from fall to spring and 4) college-level course completion rates in student's first academic year. The AACC Pathways Project collects data from four broad KPI categories listed below. For this study, the researcher selected four specific KPIs, one from each category representing each success metric mentioned previously. The researcher selected these specific KPIs because examining these success rates can predict long-term success in how institutions can improve student outcomes (Jenkins & Bailey, 2017).

AACC Pathways Project KPIs:

1) Early momentum KPIs:

- a) Earned 6+ college credits in 1st term
- b) Earned 12+ college credits in 1st term
- c) Earned 15+ college credits in year 1

- d) Earned 24+ college credits in year 1
- e) Earned 30+ college credits in year 1
- 2) Gateway math and English completion KPIs:
 - a) Completed college math in year 1
 - b) Completed college English in year 1
 - c) Completed both college math and English in year 1
- 3) Persistence KPIs:
 - a) Persisted from term 1 to term 2
- 4) College course completion KPI:
 - a) College-level course completion rate in students' first academic year (AACC, 2017)

Summary

Guided pathways claims to break down barriers for underrepresented minorities but African American students are still falling through the pipeline and are not reaching the same academic standards and achievements as White students. Even though guided pathways implemented at most colleges are seeing progress in most students, colleges committed to equity cannot assume these strategies close gaps in outcomes (Bailey, 2018). Guided pathways is a complex reform, and there is still much that is unknown about the impacts of the countless changes in organizational practice and culture in the model. The current research on guided pathways focuses on overall student success but rarely zeros in on how African American students are faring in the model. When the data is disaggregated by race, there are still significant differences in success rates between African American and White students. "If the benefits of guided pathways is skewed toward the former group (White students), then the latter group (African American students) risks not seeing academic improvements or potentially regressing"

(Kubler, 2018). This research also points to the need for comprehensive data collection and analysis on guided pathways. If the former group shows significant “improvements and the latter group shows no improvement or a slight decline in learning outcomes, it may still be possible to show an overall improvement in school-wide achievement” (Kubler, 2018). Still, more studies are needed to advance the research on guided pathways (Kubler, 2018). Tracking student success rates based on race is vital to understanding the actual results of the guided pathways model.

Conducting this study will assist in identifying if guided pathways has impacted student success outcomes by race. The study can also benefit African American student learners if there is a significant difference in success rates between African American and White students. In addition, to producing results that can inform and improve practice on how to better, serve African American students. Lastly, this study provides a basis for further research on guided pathways by examining differences in success outcomes based on race.

Definition of Terms

American Association of Community Colleges (AACC) Pathways Project. A national project dedicated to improving student success rates by assisting community colleges in building the capacity to design and implement guided pathways on a large scale for all their students (AACC, 2019). The project reflects AACC’s commitment to follow through on recommendations outlined in the 2012 report of the 21st Century Commission on the Future of Community Colleges, *Reclaiming the American Dream*, and the 2014 implementation guide, *Empowering Community Colleges to Build the Nation’s Future* (AACC, 2012). Funded through the Bill & Melinda Gates Foundation, thirty diverse institutions from seventeen states were selected to participate in intensive Pathways Project work over three years. The selection criteria were intentionally rigorous, as the project was designed to help colleges already

progressing on a student success agenda to advance that work to the next level. Institutions under the direction of the AACC Pathways Project receive grant funding by annually reporting data to the Community College Research Center (CCRC) on the college's KPIs (Key Performance Indicators) in four areas; early momentum college credits earned, completion of gateway math and English courses, persistence, and college-level course completion (AACC, 2017). Pathways Project Colleges report this data to establish a baseline and then monitor student progress as work proceeds on designing and implementing pathways at scale (AACC, 2017).

Black/African American. “A person with African ancestral origins, who self identifies, or was identified, as Black, African or Afro-Caribbean. The word was capitalized to signify its specific use in this way. In some circumstances, the word Black signifies all Non-White minority populations, and in this use serves political purposes. While this term was widely supported in the late 20th century, there were signs that such support was diminishing” (Bhopal, 2004).

Career Pathways. They are implemented at a community college and are discrete programs of study developed in response to the hiring needs of local employers. They often involve employers in the development of the program and curriculum, provide critical support services, such as assistance in finding a job after graduation, and tend to have program elements that improve success for learners of all ages and skill levels, such as reducing the need for remedial education and co-enrolling students in education and technical courses so they can apply academic lessons in job-like situations (Freeman, 2018).

Cohort. For this study, the cohort was defined as students first-time enrolled in college for fall 2017, 2018, and 2019 terms, which include fall and spring terms in the academic years of 2017-18, 2018-19, & 2019-20.

College-level course completion rates. “Number of college-level (i.e., non-remedial) credits earned (with grade A-D or P) by fall cohort students in their first full academic year divided by the total number of college-level credits attempted by these students. Withdrawals should be counted as attempted credits but not credits earned” (AACC, 2017).

Community college. Any institution accredited to award a certificate and/or associate as its highest degree, including two-year colleges and many technical institutes (Kane & Rouse, 1999).

Early Momentum Metrics/Outcomes. Leading indicators of improving student completion rates and closing equity gaps in community colleges by examining credit momentum, gateway course momentum, program momentum, and persistence momentum in a student's first academic year. For community colleges examining these near-term metrics/outcomes can predict long-term success (Jenkins & Bailey, 2017; Belfield et al., 2019).

Equity. It was grounded in the principle of fairness. In higher education, equity refers to ensuring that each student receives what they need to be successful through the intentional design of the college experience (ATD, 2019).

Gateway math and English completion. “Number and % of fall cohort students who attempted and passed at least one college-level (i.e., non-developmental) course in Math and English (with grade A-D or P) in the first full academic year. Withdrawals should be counted as attempting but not passing the course” (AACC, 2017).

Graduation/Completion rate. It was defined as a student who starts and completes at the same institution who earns a certificate and/or associate degree. For community colleges, students are expected to complete a program within 150% of the timeframe they would typically be expected to complete a certificate or degree (Bailey et al., 2006).

Guided Pathways. It was an integrated, institution-wide approach to student success. Based on intentionally designed, clear, coherent, and structured educational experiences, informed by available evidence, that guide each student effectively and efficiently from her/his point of entry through to the attainment of high-quality postsecondary credentials and careers with value in the labor market. Guided pathways has four pillars which include: (1) Clarify the Paths, (2) Help Students Get on Path, (3) Help Students Stay on their Path, and (4) Ensure Students are Learning (AACC, 2019).

Key Performance Indicators (KPIs). Measurable data collected and reported from AACC Pathways Project Colleges on student outcomes using a selected set of key performance indicators, or KPIs, to determine whether student outcomes were improving at a given institution in four areas; early momentum college credits earned, completion of gateway math, and English courses, persistence, and college-level course completion (AACC, 2017). Listed below were the four KPIs AACC Pathways Project Colleges were required to report:

1) Early momentum KPIs:

- a) Earned 6+ college credits in 1st term
- b) Earned 12+ college credits in 1st term
- c) Earned 15+ college credits in year 1
- d) Earned 24+ college credits in year 1
- e) Earned 30+ college credits in year 1

2) Gateway math and English completion KPIs:

- a) Completed college math in year 1
- b) Completed college English in year 1
- c) Completed both college math and English in year 1

3) Persistence KPIs:

- a) Persisted from term 1 to term 2

4) College course completion KPI:

- a) College-level course completion rate in students' first academic year (AACC, 2017)

Minority. The term minority was defined as the smaller number of two groups forming a whole. A racial/ ethnic minority was a person whose race or ethnicity was a non-dominant race within the group. In the United States, racial/ethnic minorities are generally considered to include Hispanics/Latinos, African Americans, Asians, Native Americans, Hawaiian/Pacific Islanders, and those of two or more races (Penn State, 2019).

Persistence. “Persistence KPI for students who Number and % of fall cohort students who enrolled in at least one credit-bearing course (including remedial) in term 2 (spring term)” (AACC, 2017).

Racial Equity. It applies justice and integration of common sense to a system that's been out of balance. When a system is out of balance, people of color feel the impacts most acutely, but, to be clear, an imbalanced system makes all of us pay (CSI, 2017).

Retention. Maintaining student enrollment in an institution was in line with individual students' goals, periodic adjustment of those goals, and persistence in completing the goals (Wild & Ebbers, 2002).

Six or more college credits. “Number and % of fall cohort students who earned six or more college-level (i.e., non-developmental) credits (with grade A-D or P) in the first term” (AACC, 2017).

Success Rates. Students earning six or more college credits in the first term, completion of gateway math and English in the first year, persistence from fall to spring, and college-level course completion rates in the student's first academic year (AACC, 2017).

Underrepresented minority/groups/students. An underrepresented minority can be defined as a group whose percentage of the population in a given group is lower than the percentage of the population in the country. In many colleges and universities, underrepresented minorities are generally considered to include: Hispanics/Latinos, African Americans, Native Americans, Native Hawaiian/Pacific Islanders, and those of two or more races (Penn State, 2019).

White. The term white was “an Indo-European. This was Blumenbach’s 18th-century term for the white race of mankind, which he derived from the people who lived in the Caucasus. This term was usually used synonymously with Caucasoid, European, or White. Alone among terms derived from traditional racial classification, Caucasian remains popular in both science and everyday language” (Bhopal, 2004).

Organization of the Study

This study is presented and organized into five chapters. Chapter 1 provided an introduction, a background of the problem, a statement of the problem, the purpose of the study, and an overview of the conceptual framework. In addition to the research questions and hypotheses aligning with a quantitative methodology. Then, the research design, significance of the study, limitations, summary, and definition of terms were discussed.

Chapter 2 provides a detailed overview of the literature review. The literature review begins with an introduction and then examines guided pathways; performance disparities between African American and White students; success outcomes of community colleges and

African American students; barriers to academic success for most students, and barriers that impact African American students. Also, early momentum outcomes were examined: credit momentum, gateway momentum, and persistence from fall to spring. Various studies were also reviewed on Early Momentum Metrics (EMMs); credit momentum, gateway momentum, and persistence momentum. Also, factors that improve African American success outcomes were provided. Then lastly, gaps in the literature were discussed.

Chapter 3 restates the purpose of the study and research questions with hypotheses. The research design along with the rationale, population, sample, and site are presented. Then lastly, the procedures and data collection, data analysis, and limitations of the study are discussed. In Chapter 4, the researcher presents the findings and results from the data analysis to identify the significant differences in success rates between African American and White students. The dissertation concludes with Chapter 5, which discusses the findings and results, conclusions, implications, and recommendations for future research to aid educational leaders in improving African American student success rates.

Chapter 2 - Literature Review

Community colleges have developed various guided pathway models to streamline students' college journey and improve their academic outcomes. Usually, this is achieved through institutions following the four pillars of guided pathways which is (1) clarify the path, (2) help students get on a path, (3) help students stay on their path, and (4) ensure students are learning. A considerable amount of literature exists on improving overall college success rates of students through studies focused on retention and student completion of a certificate/college degree (Astin, 1985, 1974, & 1999; Bean & Metzner 1985; Bean, 1990; Tinto, 1975 & 2006). Even though there is a considerable amount of information in higher education about improving overall community college success rates, there is still minimal information on African American success rates inside the guided pathways model. This literature review examined data and research studies focused on the variables in this study, relevant community college completion initiatives that aimed to increase student success outcomes which led to the current concept of guided pathways, and the American Association of Community Colleges (AACC) Pathways Project, which assists community colleges in implementing guided pathways at scale, and addressed gaps in the literature (AACC, 2019). The researcher selected the guided pathways model as a conceptual framework because this study aimed to examine whether there was a significant difference in success rates between African American and White students at community colleges that embraced guided pathways. Based on the research, guided pathways is a conceptual framework because of large-scale institutional reform that takes place to improve overall student success. The four pillars within guided pathways is considered the model that guided pathways institutions use to integrate an instructional-wide approach to student success. Then the framework is the elements within guided pathways that start with designing, planning,

implementing, and evaluating services and programs unique to each institution. Guided pathways includes every stakeholder within the institution to implement large-scale reform to improve the student's experience from entry to exit. The guided pathways framework has demonstrated that structured, well-defined pathways may improve student outcomes for all students and yield more college graduates in our society (Scott-Clayton, 2011). However, there is still gaps in the research suggesting guided pathways has bridged the achievement gap between African American and White students (Jenkins, 2018). According to Jenkins (2018), evidence on student success rates from early implementation of guided pathways showed substantial improvements for students of color. However, because “White students’ achievement has also increased, achievement gaps sometimes persist.” Jenkins stated further that there is still the question of whether or not “guided pathways reforms can be carried out in ways that close gaps in achievement among students by race/ethnicity, income, age, and other factors” (Jenkins, 2018).

This chapter discusses scholarly information and research studies to provide insight into the guided pathways model and its success in student outcomes. The literature review begins by examining (1) guided pathways; (2) performance disparities between African American and White students; (3) success outcomes of community colleges and African American students; and (4) barriers to academic success for most students and barriers that impact African American students. Then early momentum outcomes, specifically credit momentum, gateway momentum, and persistence from fall to spring, are examined. Various studies are also reviewed on Early Momentum Metrics (EMMs); credit momentum, gateway momentum, and persistence momentum. Also, factors that improve African American success outcomes are provided. Then lastly, gaps in the literature are discussed.

Guided Pathways

Origins of Guided Pathways

Before guided pathways was implemented in over 250 community colleges to improve student outcomes, the Community College Research Center (CCRC) dates the beginning of organized reform to the beginning of this century, when policymakers and educators began to question community colleges' success rates (AACC, 2017). Achieving the Dream (ATD): Community Colleges Count, which started in 2004, was the first significant initiative in this movement (AACC, 2017). ATD emphasized increasing student completion, equity, and overall community college performance. ATD was the first initiative to highlight the longitudinal tracking of individual students (AACC, 2017).

In 2009, the Bill & Melinda Gates Foundation (BMGF) became involved with ATD through the Developmental Education Initiative (DEI), where fifteen ATD colleges participated. DEI was solely constructed to identify specific developmental education pilot reforms at ATD colleges that were improving student outcomes and scaling those reforms throughout the developmental education population. The DEI programs also appeared to be implemented separately from college-level programs and the broader support services within the community colleges.

Towards the end of the 2000s, a large amount of research by the Community College Research Center (CCRC) and others acquired additional knowledge and understanding that shaped the foundation for further advances in policy and practice. These advances occurred in three broad areas. “First, the field began to draw insights from behavioral economics to argue that community college environment was too complex and confusing for students, suggesting that college-level programs needed to be simplified and made more coherent” (AACC, n.d.-a).

“The implications of behavioral economics research for community college practice was formally articulated in a BMGF-funded CCRC paper, *The Shapeless River*” (Scott-Clayton, 2011). Second, CCRC and others produced research showing that students who gained early momentum (by passing the gateway courses in a program of study in their first year of college) were much more likely to graduate than those who took more time to enter a program (AACC, 2017; Attewell, Heil, & Reisel, 2012; Jenkins & Cho, 2012). Then lastly, the third discovery from CCRC and other experts on developmental education determined that developmental assessments did not accurately pinpoint student’s needs, and traditional developmental coursework did not help underprepared students succeed at higher rates, while accelerated and contextualized coursework held more promise (AACC, 2017; Bailey, 2009; Edgecombe, 2011; Jenkins et al., 2010; Perin, 2011; Scott-Clayton, 2012; Zeidenberg, Cho, & Jenkins, 2010). These findings supported the development and large-scale adoption of “co-requisite” models, which placed many students into college-level courses while providing them with the support they needed to thrive in those courses (AACC, 2017). The implications of the ATD and DEI practices and associated literature outlined that developmental education should not be conceptualized as a separate activity but rather be designed into a broader model as part of an on-ramp to college-level programs of study (AACC, 2017). This change became an essential part of more comprehensive models.

The knowledge gained from the research and practices from ATD and DEI mentioned above contributed to the conceptual foundation of the Bill & Melinda Gates-funded Completion by Design (CBD) initiative, which began in 2011. CBD was based on the following principles:

- (1) Accelerate entry into coherent programs of study
- (2) Minimize the time required to get college-ready

- (3) Ensure that students know the requirements to succeed
- (4) Customize and contextualize instruction
- (5) Integrate student support with instruction
- (6) Continually monitor student progress and proactively provide feedback
- (7) Reward behaviors that contribute to completion
- (8) Leverage technology to improve learning and program delivery (AACC, 2017;

Grossman et al., 2015)

A significant amount of the work from ATD, DEI, and CBD was the building blocks of the guided pathways model that guided pathways institutions use today. However, the principles outlined in the CBD initiative were not implemented at each affiliate institution. There were variations of the CBD model, which made it difficult to evaluate. Still, CBD's variety in implementation did provide CCRC with the opportunity to observe the implications of different combinations of these elements (AACC, 2017). The results from the CCRC report suggested that the most successful colleges used the college-level program of study as a central organizing point for college reforms. Then around the same time, the experience from CBD and associated insights led to the solidification and elaboration of the guided pathways model articulated in CCRC's book, *Redesigning America's Community Colleges* (Bailey et al., 2015a).

Completion by Design also "created the conditions that allowed participating colleges such as Miami Dade College, Davidson County Community College (NC), Lorain County Community College (OH), and Sinclair Community College (OH) to become emerging leaders in the guided pathways movement" (AACC, 2017; Grossman et al., 2015). The CBD initiative also trained a team of administrators, and change management experts engaged in the Bill & Melinda Gates Foundation's pathways-focused investment, now called the AACC Pathways

Project (AACC, 2017). A national project dedicated to improving student success rates by assisting community colleges in building the capacity to design and implement guided pathways on a large scale for all their students (AACC, 2019). With the transition from CBD to guided pathways, these initiatives derived from the old “cafeteria model” that was appropriate to the college's primary mission in the 1960s, 70s, 80s, and 90s, which was to expand access to higher education dramatically, a mission they fulfilled beyond expectation.

According to research on organizational performance from both inside and outside education, diverse innovations were not enough to significantly improve student success outcomes and learning, even when applied at scale. According to the literature, community colleges must redesign programs and support services comprehensively and at scale to support student progression and learning (AACC, 2017). A substantial amount of community colleges were beginning to see significant improvements in student outcomes by redesigning programs and services to improve the student experience along four dimensions: (1) Clarify the Paths, (2) Help Students Get on Path, (3) Help Students Stay on their Path, and (4) Ensure Students are Learning (AACC, 2019). These four dimensions derive from the guided pathways model.

Defining Guided Pathways

After several years of community college completion reforms, compelling evidence has emerged on what works to help more students persist and succeed. The previous initiatives or completion reforms have led educators to what is now called guided pathways. One of the leading national pathway initiatives, the American Association of Community Colleges Pathways Project, defines guided pathways as an integrated, institution-wide approach to student success (AACC, 2019). Guided pathways is based on intentionally designed, clear, coherent, and structured educational experiences, informed by available evidence, that guide each student

effectively and efficiently from her/his point of entry through the attainment of high-quality postsecondary credentials and careers with value in the labor market. The guided pathway model takes additional steps inside and outside the classroom to ensure students are learning (Bailey et al., 2015a). The guided pathways model embodies an intensive effort to “coordinate classroom learning, administrative duties, and student services to support and empower students” (Bailey et al., 2015a). In addition to the four dimensions in guided pathways, several early outcomes are measured within the model, which include (1) the number of college credits earned in the student's first term and first year, (2) completion of gateway math and English courses in the students first year, (3) a number of college credits earned in the program of study in the students first-year, (4) persistence from term 1 to term 2, (5) rates of college-level course completion in students first academic year, and (6) examining equity in all key performance indicators.

Clarify the Paths

In the first dimension, “clarify the paths,” programs are mapped to transfer and career outcomes providing students with simplified choices of default program maps to support students' end goals (AACC, 2019). Program maps are clear for every program for students to quickly identify and understand what courses are necessary to complete a program or qualify for transfer. In addition to how long completion will take and what opportunities for employment or further education they will obtain at the end of the program (Bailey et al., 2015a). These maps provide every new student with a plan to graduate on time from day one while also removing the guesswork of how to move from the admission application process to the commencement ceremony (Jones, 2015).

Help Students Get on Path

In the second dimension of the guided pathways model, “helping students get on path,” community colleges assist new students in exploring programs, considering possible careers, and developing complete academic plans from the start for their students (Bailey et al., 2015a). Undecided students are encouraged to narrow their options by selecting from clusters of majors such as business, social sciences, or healthcare programs that align with the student's interests (Bailey et al., 2015a). Also, “developmental education reforms were enabled so students can enroll more quickly into college-level courses, including courses in their field that will keep them engaged in college” (Bailey et al., 2015a). Lastly, another layer to this dimension was building stronger K-12 partnerships focused on early remediation in the final year of high school and career/college program exploration (AACC, 2019). Helping students get on a path was designed to “shift the focus of student choice from picking courses to picking programs” (Johnstone, 2015, p. 8).

Help Students Stay on their Path

To “help students stay on their path,” support services were in place to help them succeed (Bailey et al., 2015a). Ensuring that students stay on path is considered a guardrail approach offering academic and non-academic support services alongside intrusive advising practices to keep students from veering off track (Bailey et al., 2015a; Jaggars & Fletcher, 2014; Pakowski III, 2019). Students' academic progress is tracked. If a student starts to fall behind or has problems in a course, the advisor receives an alert/notification. The alert system notifies the advisors so the student can receive the support they need, whether academic or non-academic (Bailey et al., 2015a). These systems were set to ensure students' progress and redirect students who were not progressing in a program by eliminating institutional barriers (Bailey et al, 2015a).

Ensure Students are Learning

Student learning is assessed in the final dimension of the guided pathways model. Institutions track student learning outcomes and work to improve teaching (Bailey et al., 2015a). All program learning outcomes are evaluated to ensure students are learning. This work starts with forming clear learning outcomes at the course and programmatic levels, which connect to transfer requirements and career advancement (Bailey et al., 2015a; Jenkins, 2011; Jenkins & Cho, 2013). While the focus has been on learning outcomes and curriculum development, the guided pathways model has continuously placed students at the center of all discussions (Bragg & Krismer, 2016). To ensure students are learning, the guided pathways model has also put a substantial amount of work into cultivating effective teaching practices and faculty peer activities (Bailey et al., 2015b).

“The guided pathways model has continued the continuous refinement and improvement theme to ensure that students are learning” (Pakowski III, 2019, p. 46). The four dimensions of the guided pathways model are the foundation and essential practices of community colleges implementing large-scale transformational change. Embracing guided pathways involves every aspect of the institution, requiring redesigning central departments and areas such as developmental education, instruction, student services, support services, and advising. For this reason, implementation takes several years and requires coordination among all constituents, including administrators, faculty, advisors, financial aid personnel, schedulers, technology specialists, and many others. According to Bailey (2017), guided pathways involve:

changing the way things have always been done, which was often met with skepticism and resistance. Reform efforts should involve faculty and advisors from the beginning to ensure buy-in. Reform leaders should also underscore for faculty and staff that guided

pathways reforms do not necessarily limit choice, but rather provide a systematic process through which students can make more informed choices. (p. 3)

According to the literature, more institutions will continue to embrace guided pathways to improve student outcomes, and leaders will need to involve their employees to seek buy-in. The following section examines guided pathways as a conceptual framework.

Guided Pathways as a Conceptual Framework

Various community college completion reforms that led to guided pathways provide decades of research on what great lengths educators have taken to improve student outcomes. According to the literature, the main theories embedded in guided pathways is behavioral economics and self-regulated learning (Bailey et al., 2015a). Bailey et al. (2015a) provided the following definition: “Behavioral economics suggests ways that colleges can help students make decisions to increase their likelihood of completion without restricting their options” (p. 34). Behavioral economics has combined a traditional understanding of economics with psychology to examine people's decisions and, more importantly, the decision-making process itself (Bailey et al., 2015a). Behavioral economics embedded in guided pathways provides students with the “paradox of choice” (Schwartz, 2004). In the guided pathways model, this paradox eliminates several tough decisions students may face while still preserving the student’s ability to make choices (Pakowski III, 2019, p. 49). Then “self-regulated learning” results from numerous developmental learning activities which are embedded throughout the guided pathways model to increase student motivation, goal-setting, and resiliency” (Bailey et al., 2015a, p. 34). Self-regulated learning has focused on intimately engaging students well beyond the classroom. These theoretical frameworks support a distinct transition from knowledge transmission, which focuses on lecturing and drilling home facts, to learning facilitation, which focuses on critical

thinking, meta-cognition, and scaffolding knowledge (Bailey et al., 2015a; as cited in Pakowski III, 2019, p. 48).

The success of the guided pathways model is attributed to its three elements: planning, implementation, and evaluation (AACC, 2019). In the first element, the work begins with thorough planning. Essential conditions are examined, infrastructure is observed, and everyone is prepared and aware inside and outside the institution. Before implementation occurs, check for barriers to ensure sustainability and involve everyone from leadership, staff, faculty, students, community stakeholders, etc. In the second element, implementation encompasses the four dimensions embedded in guided pathways which is considered the model within guided pathways which includes: (1) clarifying paths to students' end goals, (2) helping students choose and enter a pathway, (3) helping students stay on path, and (4) ensuring students are learning. The last element, evaluation, is the early outcomes that are the key performance indicators measured in the AACC Pathways Project. These elements aid in the continuous improvement, sustainability, and implementation to revisit and build pathways at scale to determine what works and adjust areas needing improvement. Guided pathways has demonstrated that structured, well-defined pathways may improve student outcomes and increase countless more college graduates in our society (Scott-Clayton, 2011). The literature has shown that guided pathways enhanced the rate at which students attended college, gave them a framework to enroll full-time, and encouraged them to take sufficient classes to complete in two years (Edgecombe, 2011; Hoachlander et al., 2003; Jones, 2015). By making navigation far less complex, guided pathways removed the need for students to learn by trial and error (Grubb, 2006; Jaggars & Fletcher, 2014). Another benefit of the guided pathways model is it has connected colleges with their K-12

constituencies in new ways to ensure a cohesive student experience and a smoother transition to college (Conley, 2003; Venezia & Jaeger, 2013).

While student success should be the concern of every institution, outcomes-based funding efforts have produced state-level mandates that force colleges to increase outcomes. The AACC Pathways Project examined outcomes such as college-level credits earned, gateway math and English completion, persistence, and college-level course completion rates in a student's first academic year. In 2019, AACC included equity to ensure all students achieved these outcomes (AACC, 2019). These academic outcomes were associated with retention and completion (Attewell et al., 2012; Calcagno, Bailey, Jenkins, et al., 2008; Crosta, 2013; Jenkins & Cho, 2013; Zeidenberg, Jenkins, & Scott, 2012). Also, AACC has included these measures in its Voluntary Framework of Accountability (AACC, n.d.-c). Regardless of institutional motivation, the guided pathways model creates a promising framework for college success (Pakowski III, 2019, p.17). The model combines best practices, theory, robust research, and elements outside of education to create a comprehensive plan to move student outcomes in the right direction (Pakowski III, 2019, p.17).

AACC Pathways Project

In 2015 the AACC joined forces with several peers, foundations, and advocacy groups to create the AACC Pathways Project. The AACC Pathways Project was meant to navigate two-year colleges in a new direction. The research suggested that the project was “grounded in behavioral economics and self-regulated learning, which work in tandem to reinforce pathways, onboarding activities, and learning strategies so that students were learning and acquiring skills necessary to be successful in their academic journeys” (Pakowski III, 2019, p. 12). The AACC Pathways Project is a national project dedicated to improving student success rates by assisting

community colleges to build the capacity to design and implement guided pathways on a large scale for all their students (AACC, 2019). The project reflected AACC's commitment to follow through on recommendations outlined in the 2012 report of the 21st Century Commission on the Future of Community Colleges, Reclaiming the American Dream, and the 2014 implementation guide, Empowering Community Colleges to Build the Nation's Future (AACC, 2012).

The Pathways Project was funded through the Bill & Melinda Gates Foundation. Thirty diverse institutions from seventeen states were selected to participate in intensive Pathways Project work over three years. The selection criteria was intentionally rigorous, as the project was designed to help colleges already progressing on a student success agenda to advance their work to the next level. Institutions under the direction of the AACC Pathways Project received grant funding by annually reporting data to the Community College Research Center (CCRC) on the college's KPIs (key performance indicators) in four areas; early momentum college credits earned, completion of gateway math and English courses, persistence, and college-level course completion (AACC, 2017). Pathways Project Colleges reported this data to establish a baseline and then monitored student progress as work proceeds on designing and implementing pathways at scale (AACC, 2017).

The AACC Pathways Project is developed around four key pillars of guided pathways: creating paths to end goals, helping students choose and enter a pathway, helping students stay on the pathway they choose, and ensuring that students are actively learning (AACC, n.d.-b). Essential practices under each pillar work to clearly define programs and transfer pathways, create bridges between K-12 and postsecondary institutions, accelerate developmental education, redevelop academic advising, embed academic and non-academic supports, generate and refine

learning outcomes, integrate experiential learning opportunities, and retrain faculty to employ highly effective teaching practices in the classroom (AACC, n.d.-b).

Based on the research, the concept of guided pathways has existed for close to thirty years. The early leaders in this field were from Florida State University (FSU), Arizona State University (ASU), Miami Dade College (MDC), and Queensborough Community College. “At FSU, faculty assisted in the development of definitive sequences of courses, default choices, and broad exploratory majors in the early 1990s” (Jenkins & Cho, 2013). Likewise, ASU established maps of its programs and created both exploratory paths for undecided students and clear transfer pathways between community colleges and their universities (Jenkins & Cho, 2013; Pakowski III, 2019, p.14). At ASU, these strides improved four-year graduation rates by more than 15%; at FSU, four-year graduation rates increased from 44% to 61% (Jones, 2015).

For Miami Dade College, a two-year college, “early work with guided pathways resulted in a homegrown project seen by many as a precursor to the AACC Pathways Project” (Pakowski III, 2019, p.14). “At MDC, the model included structured program maps, an on-ramp to programs, academic and non-academic supports, bridges from developmental education to college-level coursework, and creation of broad communities of interest” (Pakowski III, 2019, p.14). More than 50% of MDC’s faculty and staff actively participated in ongoing exercises to fine-tune and advance their projects (Rodicio, Mayer, and Jenkins, 2014). At Queensborough Community College, college officials effectively “expanded the on-ramp concept by creating broad academies for first-year students centered around five multi-disciplinary related pathways: business, arts, STEM, health sciences, and liberal arts” (Bailey et al., 2015b). Since then implementation, retention, and graduation rates have increased (Jenkins & Cho, 2013; Pakowski III, 2019, p.15).

Regardless of the literature confirming the hard work and benefits of guided pathways, there are not many in-depth studies of the AACC Pathways Project due to it being relatively new. The AACC and the site-level implementation teams are collecting and analyzing data, but this information has not been examined or inspected in an in-depth manner. Also, it is hard to “evaluate the effectiveness of whole-institution reforms, and the only option is to wait several years to observe whether guided pathways improve institutions outcomes at much higher rates than other reform strategies” (Bailey et al., 2015b, p. 6).

Nevertheless, the capacity of the project to change retention and completion among community college students is crucial to community colleges, policymakers, students, and taxpayers throughout the country. Education beyond high school is necessary to earn a comfortable living wage (Zeidenberg, 2008). “The societal implications of creating far more educated, higher-earning (and higher tax-paying) citizens could hold significant economic impacts for the entire country” (Pakowski III, 2019, p.15). If effective, the AACC model may offer an authentic, scalable solution to support change as revolutionary as the initial creation of the community college itself (Pakowski III, 2019, p.15).

Performance Disparities in Higher Education

Among the vital issues community colleges face, the two noticeable are gaps in educational attainment between White and minority populations and lack of degree completion (NSC, 2018). Levesque (2018) reported that community colleges annually enroll many minority students from all ethnic groups. This group consisted of Native Americans, African Americans, and Hispanic students, the largest ethnic groups enrolling for degree and certificate completion in community colleges. Levesque (2018) revealed that many students enrolling in community colleges do not complete their coursework. For example, the completion rate of college students

in community colleges in 2018 stood at 40% compared to universities at 60% (Levesque, 2018). Despite the low completion rates of students enrolling in community college, African Americans are among the minority groups that recorded low completion rates compared to White students (Levesque, 2018). African American students completed college at a low rate of 42%, 20 percentage points less than the 62% rate for White students, according to national statistics on college graduation rates by race (Levesque, 2018). According to the National Student Clearinghouse Research Center (2022), White and Asian students graduated at similar rates, 51.2% and 49.7%. While Hispanic and African American students graduated 36.8% and 30.1% (NSC, 2022). This data included the fall 2015 cohort of first-time, part-time, and full-time public community college students nationwide for six-year completion rates.

According to the National Student Clearinghouse Research Center (2018), national diversity is increasing, and the disparity in graduation rates between White and minority student populations may ultimately have harmful effects. The NSC Research Center (2018) stated:

Approximately 40% of all community college students who started their education in 2012 graduated within six years, but only 36% of Hispanic and 27% of African American students graduated from a two-year institution within that same time. Asian students' completion rate was 49%, followed by White students at 48%. Of the 40% completed, 71% of students completed at their starting institution, while 29% completed at a different institution. (pp.13, 19, 23)

Slightly less than half of the students (46%) who began at a two-year public institution were no longer enrolled by the end of the study period (NSC, 2018). Furthermore, nearly 55 % of African American students who started at a community college in 2012 did not complete their studies and were no longer enrolled at any institution (NSC, 2018). The National Center for Public

Policy and Higher Education (2015) warned, “If states do not improve the education of all racial/ethnic groups, the skills of the workforce and the incomes of U.S. residents were projected to decline over the next two decades” (p. 1).

For many years institutions have been focused on advancing the completion movement to progress student outcomes. Initiatives such as guided pathways led to improving outcomes. In past practices, community colleges mainly worked hard on promoting career opportunities for their students, reforming remedial education, encouraging students to attend full-time, and offering tuition-free programs (Smith, 2019). However, achievement gaps between African American, Hispanic, and low-income students and their White and wealthier peers still persist even as each group graduates at better rates (Smith, 2019). Achieving the Dream (ATD), the national organization focused on student success is inspiring colleges to place racial and wealth equity at the heart of their efforts to help more students complete a degree. In February 2019, ATD held its first Equity Institute at its 15th Annual National Conference and announced its new partnership with the Bill & Melinda Gates Foundation to eliminate equity gaps using adaptive learning technology in courses (Smith, 2019).

Shaun Harper, executive director of the University of Southern California’s Race and Equity Center and one of the keynote speakers for ATD’s 15th Annual National Conference, stated that “we will never make progress in moving the needle on student success for students of color if we don't get real and understand the totality of factors that undermine their success on our campuses” (IHE, 2019). Harper also mentioned that any effort to increase “student success and outcomes and experiences at community colleges, especially given the racial diversity of community colleges, will always be incomplete if it is not done through the prism of equity” (IHE, 2019).

To improve performance gaps, ATD's partnership with the Gates Foundation, known as “Every Learner Everywhere,” introduced adaptive courseware to two-year colleges to help students, predominantly minority and low-income students, from dropping out of college (Smith, 2019). “Adaptive courseware uses technology to personalize classroom instruction based on how students respond” (Smith, 2019). Stacey Vanderheiden Guney, the director of “Every Learner Everywhere” from the Western Interstate Commission for Higher Education (WICHE), suggested that the expectation of the adaptive courseware will decrease racial and income-based equity gaps, particularly in gateway math and English courses, and may improve retention and graduation rates. The program was expected to launch in Texas, Florida, and Ohio. With hopes to expand to more than 200 colleges nationwide, the researcher could not locate any updates on this program (Smith, 2019).

Another main effort to improve student outcomes and close equity gaps has been the implementation of guided pathways which is also affiliated with the work from ATD and AACC. Research suggests that guided pathways allows community colleges to support student success outcomes that provide a roadmap to help students complete a degree or certificate. In guided pathways, processes begin with outcomes in mind and then “redesign programs and support services enabling students to achieve these goals” (Bailey et al., 2015a, p. 16). Guided pathways also encouraged educational leaders and policymakers to look at new partnerships with secondary schools to ensure a smoother, more cohesive educational experience (Barnett & Bragg, 2006; Conklin Bueschel & Venezia, 2006). Also, guided pathways require reforms that could easily be encumbered into the college’s existing budget to ensure sustainability, a key reason many efforts were short-lived in the past (Belfield et al., 2014). Research also suggested that “the same underserved students who are educated in disproportionate numbers by

community colleges are more likely to benefit from the guided pathways model through the model's increased structure, easier navigation, and linkage to careers and continued education”(Barnett & Bragg, 2006, p. 99). Serving underserved students is a critical advantage of guided pathways, given the increased focus on targeting this demographic of students to provide equity in outcomes (Belfield et al., 2014; Grubb, 2006). In addition, “this model is built upon previous pathway concepts to effectively support all students in various transitions’ which consisted of “high school-to-community college, community college-to-university, and degree-to-career.” (Pakowski III, 2019, p.23). According to the research, these “multiple-entry and exit points in the guided pathways model has afforded students a much greater deal of accessibility and flexibility” (Barnett & Bragg, 2006, p. 102). Hopefully, guided pathways will assist in closing performance disparities and improve student completion at community colleges.

The literature explored in the previous paragraphs illustrated the performance disparities between African American and White students and Hispanic students. But also provided information on how higher education leaders are progressing toward closing achievement gaps between African American and White students. As educational leaders continue to make strides to improve outcomes for community college students, the current initiative is guided pathways which, according to experts, is showing promising results. Research suggests that guided pathways allow community colleges to support student success outcomes and close equity gaps by providing a roadmap to completion.

Success Outcomes

Community College

The context of this study cannot be fully understood without a current clear picture of the overall success outcomes of community college students and those of African American

students. For more than a decade, state and federal policymakers increased accountability from community colleges, as the significance of a college degree and the cost to earn one amplified. Policymakers are looking at student outcomes as a measure of the quality of postsecondary education. One outcome measure that has received the most attention is completing a certificate/degree (ACE, 2010, p. iv). Community colleges are monitoring key performance indicators under the leadership of the AACC Pathways Project to help students achieve their completion goals and raise completion rates (AACC, 2019). According to Jenkins and Bailey (2017), examining key performance indicators (KPIs) early can predict long-term success in how institutions can improve student outcomes. These KPIs being tracked consisted of 1) students earning six or more college credits in the first term, 2) completing gateway math and English in the first year, 3) persistence from fall to spring, and 4) college-level course completion rates in students' first academic year.

Since the issue of student success has long been a favorite topic of higher education policymakers, there is no shortage of reports that detail the disparity in success outcomes by race, income, and institutional type, as well as the limitations of data most often used to calculate success rates. Less than one-fourth of community college students who start college at ages 17 to 20 transfer or receive a degree or certificate, despite more than 80% of them saying their goal was to acquire a baccalaureate degree or higher (Bailey et al., 2015a). The College Board estimates that 46% of community college students “will not graduate from any institution within six years, and 20% will still be enrolled” (Ma & Baum, 2016). The average completion time for community college students who do finish was six years (Bailey, 2016; Juszkievicz, 2016). According to IPEDS, only 19% of community college students who started in 2010 completed an associate degree or certificate in 150% of the average time to completion (Michas et al., 2016).

Another factor that suggests why community colleges' success rates continue to lag is due to funding. According to the literature, historically, community colleges' budget has been allocated per capita enrollment (headcount of full-time equivalent students) and therefore unpredictable (Bailey-Hofmann, 2019, p.19; Goldrick-Rab, 2010). This means the increase and decrease in funding over the years excluded a more stable revenue stream to support vital interventions (Bailey-Hofmann, 2019, p.19; Goldrick-Rab, 2010). Furthermore, state and federal funding for community colleges is less than K-12 and four-year college spending (Goldrick-Rab, 2010; Bailey-Hofmann, 2019, p. 22). Spending at four-year public institutions is at least double, often more than spending on community colleges, and in Maryland, “lawmakers decided community college students should be funded at 25% of the level of four-year college students” (Kahlenberg, 2015, p.4).

Despite community colleges' well-intended strides, student dropout rates remain high. Data from the National Student Clearinghouse (2017) revealed that fall-to-spring persistence rates for full-time students at public two-year institutions were slightly higher than 70%, but fall-to-fall retention rates were only 63%. However, the same data indicated that for part-time students, fall-to-spring persistence rates were only 57%, and fall-to-fall retention rates were 44% (NSC, 2017b). This evidence is of significant concern as more than half of the nine million students in American community colleges attend part-time (Ginder et al., 2017). Overall, a little less than half of new students in community colleges are retained fall-to-fall (NSC, 2017b).

The literature indicated that reforms, which dramatically improve retention rates, are rare, if nonexistent (Tinto, 2006). According to Astin, this stagnation caught the attention of policymakers, who began placing education at all levels in their eyesight since the publication of *A Nation at Risk* in 1983 (as cited in Armstrong, 1994; Astin, 1985). Systems were set in place to

tie a share of a college's budget to outcomes as a system of rewards and punishments (Armstrong, 1994). Policymakers were holding colleges accountable for student departures, costing taxpayers up to \$4 billion every five years (American Institutes of Research as cited in Jones, 2015).

While there is still a substantial amount of concentration regarding “the extent to which a college has been responsible for student outcomes” (Winston, as cited in Belfield, Crosta, & Jenkins, 2014, p. 329), community colleges are now being held accountable by their budgets. Until now, community colleges have been funded based on enrollment alone since their creation (Goldrick-Rab, 2010). This has incredible potential implications since “community colleges' governance and funding structures are tightly linked” (Mullin & Honeyman, as cited in Goldrick-Rab, 2010, p. 442). As Jenkins and Rodriguez (2013) pointed out, these funding structures are intended to “improve performance to gain increased funding, increase awareness of the state's higher education priorities and their performance, and generate competition between institutions to rank well against their peers” (p. 29).

Now that the budget is tied to performance, “community colleges have looked for ways to overcome barriers to success woven into the basic fabric of their being as open-access institutions” (Pakowski III, 2019, p.19). Community colleges have historically represented a diverse group of students who are identified as at-risk or underprepared. Without a doubt, these students within the community college system are disproportionately minority, low-income, and first-generation college students, identities which are often quickly blamed for poor outcomes (Bailey et al., 2015a; Belfield & Jenkins, 2014; Goldrick-Rab, 2010; Green, 2006; Pratt, 2017). Serving this student demographic has been the primary mission of community colleges (Armstrong, 1994). Community colleges are called to “provide opportunities for everyone,

regardless of prior advantages or disadvantages” (Goldrick-Rab, 2010, p. 438). To that fact, “community colleges have served nearly 60% of all African American undergraduates and two-thirds of Hispanic undergraduates” (Goldrick-Rab, 2010). According to the research, since the beginning of the “Truman administration, community colleges have been called upon to bridge the educational attainment gap for socioeconomically disadvantaged citizens and minorities” (Bailey et al., 2015a). “Conversely, McIntosh & Rouse found a correlation between higher completion rates and higher socioeconomic statuses, which has been problematic for community colleges that typically enroll those from disadvantaged socioeconomic backgrounds” (Goldrick-Rab, 2010).

African American Students

As the literature continues to showcase the challenges community colleges face to improve overall success rates, there is also significant concern surrounding African American success outcomes. According to the research, African American students fall excessively behind their White peers in course completion and completing an associate degree/certificate (Barrett, 2012). Complete College America (2011) reported the likelihood of graduation for African American and Hispanic students was low. The main reason for this difference was the gap between Whites and African Americans and between Whites and Latinos in graduation rates from high school and academic college preparation (Barrett, 2012, p.33-34; Gutierrez & Dantes, 2009; Kuh et al., 2007). The literature revealed students who struggle in high school become students who struggle in college. According to the National Center for Education Statistics (2011), they projected the following changes in enrollment by ethnicity by the year 2020: “White—1% increase; African American—25% increase; Hispanic—46% increase; Asian/Pacific Islander—25% increase; and American Indian/Alaska Native—1% Decrease” (p.

23). Given our country's changing demographics and the projections from NCES, the United States will likely not be economically competitive if these students do not succeed (NCES, 2021).

In 2017, Inside Higher Education published an article on *Graduation Rates and Race*, stating on average, White and Asian students earn a college-level credential at a rate of about twenty points higher than African American students (Tate, 2017). The same article on *Graduation Rates and Race* further explained that students who started at a community college and then continued their education at a four-year public institution experienced very different outcomes depending on race and ethnicity (Tate, 2017). The article explained that, after “six years, about a quarter of Asian students and a fifth of White students had finished their degrees, compared to about a tenth of Hispanic students and one in twelve African American students” (Tate, 2017, p.3). The data from the Inside Higher Education article was retrieved from the National Student Clearinghouse Research Center (NSC), which evaluated data from students nationwide who entered a college or university in the fall of 2010. The data represented students at two- and four-year colleges who were part-time and full-time students and those who graduated after transferring to another institution. In total, 55% of those students completed a degree or certificate within six years of entering a postsecondary institution. However, when the data was desegregated by race and ethnicity, those rates varied by up to 25% (Tate, 2017).

In the same article from Inside Higher Education, it was noted that “White and Asian students complete their programs at similar rates at 62% and 63% (NSC, 2017a; Tate, 2017). While Hispanic and African American students graduated at rates of 46% and 38%” (NSC, 2017a; Tate, 2017). The data also revealed that nationally, students who entered a four-year public university earned a degree or certificate at a rate of 62% (NSC, 2017a). Students who

started at a two-year public institution had an overall completion rate of credentials of 39% (NSC, 2017a). At four-year institutions, African American men completed their degrees at the lowest rate at 40%, and Asian women at the highest at 76% (NSC, 2017a). According to Doug Shapiro, a research director from the NSC who was quoted in the *Graduation Rates and Race* article, the “National Student Clearinghouse Research Center was valuable to the research in the field because it uses the most recent available data and accounts for part-time students and students who transfer to another institution during their studies” (Shapiro et al., 2017; Tate, 2017). In other studies, Shapiro also stated that this data had not previously been provided because most reports only focused on federal databases, which historically only track full-time, first-time students (Shapiro et al., 2017; Tate, 2017). According to Shapiro, the Clearinghouse has provided various sources of information on student outcomes and mobility because of its “distinctive set of data” (Shapiro et al., 2017; Tate, 2017). In the same article from Inside Higher Education on *Graduation Rates and Race*, Shapiro was also quoted as stating because of the data presented by NSC, “African American and Hispanic students were no more likely to transfer and graduate somewhere else, and, in most cases, they were less likely” (Shapiro et al., 2017; Tate, 2017).

While continuing to examine relevant literature regarding African American student success outcomes, there was also a study in 2017 conducted by The Education Trust (“an organization that advocates for the academic achievement of underrepresented students”), which revealed that “graduation rates for African American students fall far behind those of their peers of all races and ethnicities” (Bohanon, 2017). The study included 676 traditional private and public nonprofit colleges and universities nationally that enrolled 60% of all first-time, full-time African American students (Bohanon, 2017). At those institutions, African American students

had the lowest graduation rates of any ethnic group, with just 41% completing a degree within six years, and White students at 63% (Bohanon, 2017; Nichols & Evans-Bell, 2017, p. 4).

Although the college experience for African Americans can vary broadly, the study from The Education Trust mentioned that many of these students might face the same “unique combination of financial, academic, and social challenges” that hamper academic success (Bohanon, 2017). The Education Trust study suggested three solutions for improving success outcomes for African American students nationwide, which considered: “closing the graduation gap at individual schools, increasing the number of those who attend selective institutions, and improving overall graduation rates at schools where these students were most likely to attend” (Nichols & Evans-Bell, 2017, p. 3).

“The study also highlighted 18 schools that have achieved graduation rates for African American students that equal or exceed that of White students, as well as 21 institutions whose completion gap between the two groups was exceedingly large” (Bohanon, 2017). The study's authors mentioned that the findings suggested that the success of African American students stems from a commitment on the part of their institutional leaders. Based on the information shared in this section, African American students are lagging behind their peers. Still, the forthcoming section highlights some factors that may create barriers for these students.

Barriers to Academic Success

While community colleges continue to find ways to improve student outcomes, barriers still derail students' success. According to the literature, being a first-generation college student comes with more challenges to community college students' potential academic success. “An analysis of the *National Educational Longitudinal* study depicted more than one-quarter of twelfth-graders in 1992 had parents with no college education whatsoever; another 41% had only

some college education (but no bachelor's degree)" (Chen & Carroll, 2005). The data suggested that because these students lack someone at home to help them navigate postsecondary education, they were less likely to be aware of the "financial aid process and funding opportunities" (Goldrick-Rab, 2010), "persist and graduate" (Chen & Carroll, 2005), "achieve academically at high rates" (Zeidenberg, 2008), and have the basic "college knowledge" and "social know-how" needed to navigate college effectively (Bailey et al., 2015a, p. 25).

Non-Academic

Past research indicated that students who attended community colleges were also more likely to have outside, non-college influences they have to negotiate alongside their academics. "Roughly 20% of community college students were married parents, with roughly another 15% single parents" (Goldrick-Rab, 2010). In addition to childcare responsibilities, many community college students have to balance their studies with their employers (Calcagno, Bailey, Jenkins, et al., 2008). Bailey et al. (2015a) found that nearly 80% of community college students were employed and "working an average of thirty-two hours per week" (p. 82). According to Bridges (2022), "65% of African American college students were independent, meaning they must balance pursuing a degree with full-time work and family responsibilities," which was one of the main reasons African American students dropped out. According to Bailey et al. (2015a), community college students were also far more likely to attend part-time, seek vocational programs instead of college transfer options, and pursue a certificate instead of a degree (as cited in Calcagno, Bailey, Jenkins, et al., 2008). Research also suggested community college students were most likely to delay college attendance, creating a substantial gap between high school graduation and their first college coursework (Green, 2006).

Remedial Courses

An estimated 80% of community college students are placed in remedial classes (Jaggars & Hodara, 2011). According to the literature, remediation defers student success because it can involve several required courses before transfer-level credit (Hern & Snell, 2014; Jaggars, Hodara, Cho, & Xu, 2015). “Almost exclusive to community colleges, developmental education coursework has also served as a major barrier to degree completion for less academically prepared students” (Pakowski III, 2019, p.20). Belfield and Jenkins (2014) uncovered that many students had to take a substantial amount of developmental courses that did not count toward a degree, would not transfer, and ultimately extended the overall time to complete a degree.

Lingerer Student

Another critical issue that has delayed community college outcomes was the notion of a “lingerer,” or a student who continues to attend but never completes a degree. Researchers Ran, and Cho (2013) discovered that community college students persisted at very high levels and intended to complete a program. The students came back term after term and failed to graduate. More disappointing, they failed about a quarter of the courses they attempted (Ran & Cho, 2013). According to Bailey, Jaggars, and Jenkins, these actions “have led to increased excess credits that do not transfer to students’ desired four-year institutions” (Jaggars & Karp, 2016). According to The Research and Planning Group for California Community Colleges, only 19% of students complete transferable English within three years, and only 7% in math for students who start in remedial levels of English and math (Hayward & Willett, 2014).

Many states are working to shorten remediation sequences to avoid prolonged remedial placement. Connecticut and Florida passed legislation requiring the acceleration of remediation (Jaggars et al., 2015). Texas, Virginia, New York, and Baltimore County all commenced large-

scale experiments to condense their remediation sequences, producing better outcomes in these areas (Booth et al., 2014; Edgecombe, 2016; Jaggars et al., 2015). In California, Assembly Bill 705 was passed in 2017, which required institutions to place students straight into transfer-level English and math to improve their chances of graduation. As a result, community colleges in California are working to revamp their math and English sequences.

Community colleges are unique among American higher education institutions and serve students from diverse backgrounds. These institutions enroll more low-income African American and Hispanic students than private and public four universities (Bailey & Jenkins, 2009, as cited in Goldrick-Rab, 2010, p. 438). Since community colleges are mainly seen as “the primary point of entry to the higher education system” (Pratt, 2017, p. 36), “a fundamental redesign was necessary to improve outcomes for so many students in need” (Bailey et al., 2015a, p. 3). Higher education leaders sought to reform the system to improve student outcomes by maximizing access and success, which educators called the “guided pathways model” (Bailey et al., 2015a).

Barriers for African American Students

Limited Financial Resources

African American students face several obstacles toward their academic goals, and one major obstacle for these students is limited resources to pay for college (Seidman, 2005; Schwartz & Washington, 1999). Limited financial resources hurt African American students' college enrollment and retention rates (Seidman, 2005). The capacity of African American students to pay for their education and remain enrolled in college is highly linked to the low-income economic status of many of these students (Seidman, 2005). The American Council on Education studied the public's knowledge and attitudes about financing higher education, highlighting people's lack of understanding about the grants and loans received by students to

pay for college (Carter, 2006, p. 40). In the study, 83% of African American respondents thought college was not affordable (Carter, 2006, p. 40). The research also specified that African American students' "likelihood of persistence was reduced if financial aid levels were inadequate" (Kaltenbaugh, St. John, & Starkey, 1999, p. 28). These findings highlight the significant role that financial aid can have on the recruitment and retention of African American students. "However, most research on the correlation between financial aid and minority student persistence utilized limited samples of African American students, producing inconclusive results for this population" (Chen, 2008; Mendoza et al., 2009, p. 130).

Financial Aid

Financial aid is an increased critical link to retaining college students, especially for African Americans (Wise, 2011, p. 26). Given the pressure placed on students and their families by the economy, the urge for financial assistance plays a significant role in the recruitment and enrollment of desired student populations (Holley & Harris, 2010, p. 20). According to the *Journal of Blacks in Higher Education*, "well-funded universities such as Princeton, which has the nation's largest endowment per student and probably the nation's most generous financial aid program for low-income students, will undoubtedly claim an advantage in African American student retention and, subsequently, in producing high graduation rates" (JBHE, 2016, pp. 90-91). In many circumstances, financial aid is the number one factor students are not retained (JBHE, 2016, pp. 90-91). African American students "often need financial aid to pursue their educational goals" (Tierney, 1999, p. 84). According to Jones, "financial aid is often the primary consideration in deciding to continue or leave college" (Jones, 2001, p. 9).

Social and Academic Integration

Fischer (2007) identified “three factors which may affect adjustment and subsequent success of African American students in college which was minority status, socioeconomic disadvantage and being a first-generation college student” (p. 126). According to Hausmann, Schofield, and Woods (2007), “social and academic integration, along with an initial goal and institutional commitment levels, determine subsequent levels of goal and institutional commitment, which ultimately determine students’ likelihood of departing from the institution before completing their degree” (p. 805). Another lesson from the literature stated, “all students need to be academically prepared” (Goldrick-Rab, 2010, p. 451) and institutions need to “support students’ through academic help programs which include tutoring services to empower students to be independent learners and improve grades” (Pan et al., 2008, p. 92).

Race & Non-Engaged

Another factor is the racial issues in America that essentially affect African American students, and “race and ethnicity have a fundamental impact on how African American students experience college; therefore their adjustment process cannot be assumed to be the same as the traditional student” (Fischer, 2007, p. 128; Wise, 2011, p. 27). A researcher named Keonya Booker (2007) conducted a qualitative study that observed interactions within the academic classroom to analyze African Americans' perception of belonging and connection to the educational setting. Four themes were derived from “Booker’s open-ended survey: instructional style, interpersonal interactions with faculty, affective states of connection, and peer relationships” (Wise, 2011, p.27-28). The results from the study confirmed that when students were engaged and participated in class, students had a stronger sense of belonging. Booker’s (2007) study discovered that African American students preferred relational learning styles that

emphasized personal approaches to instruction. Students responded positively “to professors who were open, willing to share, and provided a safe and comfortable environment” (Wide, 2011, p. 28) in addition to instructors who were the same race as them. When the interaction between African American students and faculty took place, the students felt heard, accepted, and valued as classroom community members (Booker, 2007). However, the research suggested that African American students who are disengaged with their professors and staff or campus culture can have catastrophic results. Also, African American students exhibited a sense of not belonging due to them not seeing people they identify with, such as faculty, staff, or students who were not African American.

College-Related Stressors

There was also a study conducted by Taylor (2000) identifying stressors of African American students’ experiences in predominately White colleges causally linked to academic failure. These college-related stressors were “hostility and racism, poor rapport with faculty members, inadequate social lives, students from poor and working-class backgrounds, social issues emanating from the student, family, and community such as poverty, unemployment, teen pregnancy, involvement with the criminal justice system, adolescent violence, over-identification with special education services, and arrange of academic problems, conspire to undermine college success” (Moore & Toliver, 2010, p. 934; Taylor, 2000). Taylor’s work undoubtedly demonstrates that essential fundamentals of retention programs are required to aid in retaining our African American students.

Unprepared for College

Lastly, the literature revealed that African American students fail to master the coursework in postsecondary education that is necessary to be successful in college, which

contributes to low retention rates (Kinzie et al., 2008). The literature exposed that African American students demonstrate a disproportionate need for remedial coursework. Adelman (2004) “asserts that 62% of African American students enroll in remedial coursework in comparison to just 36% of White students” (O’Neal, Jr, 2012, p. 40). Several reasons for this may be attributed to African American students’ lack of preparation, such as a lack of secondary school experiences or unfamiliarity with the college process (Engstrom, 2008). “African American students do not benefit equally from remedial coursework compared to White students, as they do not advance at comparable rates into courses at college-level proficiency” (Bahr, 2010; O’Neal, Jr., 2012, p. 49). Students who tend not to perform well in math, specifically African American students, also have an increased rate of unsuccessful remediation (Bahr, 2010). According to the literature, many institutions were unprepared to handle African American students' developmental needs (Engstrom, 2008). While colleges have dedicated substantial resources to basic skills courses for African American students, these courses have been presented in a traditional, non-engaging manner (Engstrom, 2008). “The remaining challenge was creating remedial courses that engaged students while providing them with the necessary foundations to be successful at the college level” (O’Neal, Jr., 2012, p. 49). However, guided pathways has been making strides to reduce this challenge by placing students first and providing intrusive wraparound services that help examine the overall student's experience and not piecemeal their experiences.

A lack of financial means hampers African American students' enrollment and retention rates in college. The ability of African American students to pay for their education was intimately related to their low-income economic situation. Financial aid remains critical in maintaining college students, particularly African American students. Some criteria included

minority status, socioeconomic deprivation, being a first-generation college student, not identifying with people who look like them on campus, and not being college-ready. Institutions must provide wraparound services and increase diversity and inclusion on campus to support the academic progression of African American students.

Early Momentum Outcomes

Institutions are now examining early momentum outcomes to increase student success rates and close equity gaps. This section explores the importance of community colleges examining early momentum outcomes. The four key performance indicators examined in this study are discussed in this section which include the following: 1) earning six or more college credits in the first term, 2) completion of gateway math and English in the first year, 3) persistence from fall to spring and 4) college-level course completion rates in student's first academic year. But for this section, since metrics #1, #2, and #4 are particular, the following momentum points are discussed to cover those KPIs: credit momentum, gateway momentum, and program momentum.

There is growing evidence that examining credit momentum, gateway course momentum, persistence momentum, and program momentum metrics are strong leading indicators of improving student completion rates over a longer term and assisting with closing equity gaps (Jenkins & Bailey, 2017). The three areas of credit momentum, gateway course momentum, and persistence momentum are relatively short metrics to examine. Still, according to the research, they can assist colleges in improving student success outcomes. Jenkins and Bailey (2017) also suggested that reviewing key performance indicators (KPIs) early can predict long-term success in how institutions can improve student outcomes. Then Zhang (2019) stated community colleges that examine students earning six or more college credits in the first term help to ensure

students acquire the maximum possible credits to graduate upon completing their course work. Zhang explored the need for community colleges to establish the minimum number of credits students should take per semester and annually to graduate or perform well in their certificate or degree. However, the findings of research conducted by Belfield et al. (2019) revealed that racial backgrounds adversely affect community colleges' initiatives to ensure students enrolling in the first term earn many credits to meet their institutional goals. Belfield et al. (2019) added that the success rate of African American students in achieving early momentum expectations was relatively low compared to White students due to the socioeconomic challenges they face.

On the other hand, research findings of a study conducted by Buckles et al. (2019) alluded that the importance of community colleges examining early momentum findings on the completion of gateway math and English in the first year of enrollment encouraged students to take significant subjects that were crucial in their program curriculum. To achieve this goal, community colleges have adopted various completion initiatives to promote the accomplishment of gateway math and English by all students in their first semester after enrollment (Wang et al., 2017). The current initiatives now are guided pathways and/or the AACC Pathways Project. Nevertheless, the research findings revealed that African American students' success rates in completing gateway math and English in the first year were low compared to White students. Bahr et al. (2017) and Belfield et al. (2019) argued that the completion disparity was associated with barriers and challenges African American students face in completing the gateway math and English.

According to research findings by Teachers College, Columbia University (2021), persistence from fall to spring forms a key component in determining the success rates of college students. The findings revealed that community colleges value examining the early momentum

outcomes of persistence from fall to spring because it assists in determining students' progress and success rates. The results also found that the success rates of African Americans concerning persistence from fall to spring were lower than that of White students in community colleges (CCRC, 2021).

Lastly, according to Jenkins and Bailey (2017), when increases occur in these early momentum outcomes, research suggests it could lead educators to expect improved completion rates over a longer term. Regarding reforms like guided pathways, institutions do not have to wait several years before they can start to see evidence of the effects of these reforms (Jenkins and Bailey, 2017). Jenkins and Bailey (2017) also suggested that CCRC's experience with guided pathway reforms indicated that rising trends in these indicators should start to provide evidence of reform effects within one or two years following the implementation of guided pathways practices for all entering students but also suggested it can take two or three years longer.

Focusing on time to completion from the start; starts with institutions focusing on credit momentum metrics (Jenkins and Bailey, 2017). However the research also suggested that “for students entering community colleges in particular, there is generally little discussion on how long it will take to earn a degree” (Jenkins and Bailey, 2017). Lastly, research conducted by the National Student Clearinghouse (2021) outlined that assessing early momentum outcomes enables college students from diverse backgrounds to improve their success rates in the first academic year. Still, minimal research has been published on the achievement outcomes by race in guided pathways and specifically on how African American students are faring in the model.

Studies on Early Momentum Outcomes

The forthcoming section of the literature review summarizes, discusses, and analyzes the findings and deductions from scholarly research on the following momentum points among students enrolled in community colleges on students 1) earning six or more college credits in the first term, 2) completion of gateway math and English in the first year, 3) persistence from fall to spring, and 4) college-level course completion rates in student's first academic year. However, for this section, since metrics #1, #2, and #4 are particular, the following momentum points are discussed to cover those KPIs: credit momentum, gateway momentum, and program momentum.

Guided Pathways and EMMs

Belfield, Jenkins, and Finks Study (2019)

In 2019, Belfield, Jenkins, and Finks explored whether guided pathways has been promising in student success outcomes. The researchers examined nine measures of students' progress in their first academic year to see if they could predict student completion in subsequent years and how suitable early momentum metrics (EMMs) in guided pathways has been leading indicators to improve institutional reforms. The nine measures examined were credit momentum (6, 12, 15, 24, 30+ college-level course completion credits in the student's first semester), gateway course momentum (completion of college-level math, English, or both in a student's first academic year), and persistence momentum (fall to spring in a student's first academic year). The researchers used transcript data from three community college state systems that embraced guided pathways. The cohort consisted of first-time students from 2010-2012 who were tracked for up to six years after their first enrollment. Over 500,000 students were tracked, which included more than 75 colleges.

Since student success can be measured in different forms, Belfield, Jenkins, and Finks (2019) used two measures to define student success in terms of credential completion. These measures were (1) completion of any community college credential within three years at the student's starting institution and (2) completion at a four-year college within six years at the student's starting institution. Since researchers suggested EMMs were considered to be leading indicators of whether or not equity gaps will close in the long term, Belfield et al. (2019) analyzed two combined racial/ethnic subgroups of students to investigate whether there was proof that EMM attainment could predict long-term success for these groups. The subgroups consisted of (1) African American students and Hispanic/Latino students combined, as a proxy for historically underrepresented minority (URM) students, and (2) Asian students and White students combined, as a proxy for non-URM students (Belfield et al., 2019). For cohorts of community college students and racial/ethnic subgroups, the researchers investigated the following research questions: "How many students met each EMM? How strong are associations between EMMs and student success? What are predicted outcomes if more students were to meet each EMM?" (Belfield, Jenkins, and Finks, 2019).

The results for EMM attainment rates among African American and Hispanic students across the three different community college state systems indicated that 24% of African American and Hispanic students in one of the three community college state systems completed college-level English in their first academic year. These rates were primarily comparable across the three community college state systems. However, compared with the results among all students in this study, the rates of EMM attainment were much lower for African American and Hispanic students (Belfield et al., 2019). Approximately one-fifth of minority students were "on track," and only one in 20 were "on pace" (Belfield et al., 2019). The persistence rate was about

60%, meaning that two-fifths of African American and Hispanic students stay only one semester at community college (Belfield et al., 2019).

Then the EMM attainment rate among African American and Hispanic (URM) students relative to those among Asian and White (non-URM) students were significant gaps in rates across all of the EMMs (credit momentum, gateway course momentum, and persistence momentum). For instance, in one of the community college state systems, African American and Hispanic students completed college-level math in their first year at half the rate of Asian and White students. For some EMMs and community college state systems, African American and Hispanic students' attainment rates were only one-third of those of Asian and White students (Belfield et al., 2019). However, the gaps were not steady across all EMMs or all state systems (Belfield et al., 2019). For example, for the EMM earning 12 credits in the first semester, the relative rates of URM to non-URM attainment in all three community college state systems were 48%, 24%, and 80%, respectively (Belfield et al., 2019). This study showed various improvements that may be needed for college systems to close achievement gaps among these subgroups, which demonstrates the need for more reform (Belfield et al., 2019).

Lastly, the results for the three-year community college completion rates among African American and Hispanic students' EMM attainment and six-year completion rates of any credential among African American and Hispanic students' EMM attainment indicated that these findings hold for all methods, samples, and state systems (Belfield et al., 2019). African American and Hispanic students who met EMMs had significantly higher community college and award completion rates (Belfield et al., 2019). The scales were massive, and the effects were again incremental across EMMs. The similarity of these estimates to those of the total sample was essential in light of the low EMM attainment rates generally (Belfield et al., 2019). The

researchers suggested that if African American and Hispanic students meet the EMMs, the estimated increase in their chances of completing an award was similar to those for Asian and White students who met their EMMs (Belfield et al., 2019). Together, these results suggested that assisting African American and Hispanic students to start strong and build early momentum, as indicated here by the EMMs, was a potential strategy for enhancing completion rates for these groups of students and all other students (Belfield et al., 2019).

Jenkins, Brown, Fink, Lahr, and Yanagiura Study (2018)

Another state system that has implemented guided pathways at scale and tracked early momentum KPIs was the Tennessee State System/Tennessee Board of Regents (TBR). Tennessee saw promising results from guided pathways on student success outcomes among their state community colleges. This system was one of the states that implemented guided pathways reforms the longest and has 13 community colleges. In 2018, Jenkins, Brown, Fink, Lahr, and Yanagiura reported on the promising trends in leading indicators of student completion at TBR. Jenkins et al. (2018) used fall 2010 – 2016 student unit record data from TBR, had 13 Tennessee community colleges complete the “Completion Practices Scale of the Adoption Assessment” form, and conducted phone interviews with these colleges to report on practices and early momentum KPI outcomes. The “Completion Practices Scale of Adoption Assessment” was an assessment tool that CCRC, AACC, and guided pathways college leaders use to gather information on how guided pathways colleges' adoption of practices were faring at a given guided pathways institution. College leadership teams also used it to provide formative feedback on efforts to plan and implement guided pathways reforms. TBR used guided pathways four pillars (1. Mapping pathways to Students' End Goals, 2.) Helping Students Choose and Enter a Program Pathway, 3.) Keeping Students on Path, 4.) Ensuring Students Are Learning), then

added their roadmap to completion for their students that were unique to their institution. TBR defined its early momentum KPIs that they could track, including most of the early momentum KPIs tracked at most guided pathways institutions. To align the TBR study with the researcher's study, the researcher only focused on the performance outcomes between African American and White students and the recommended pathway practices used in the Jenkins, et al., (2018) study.

Since performance disparities are being discussed between African American and White students in this study, it was also important to highlight from the Jenkins et al. (2018) study that Roane State Community College started reviewing disaggregated course data to create interventions for particular student populations (students of color). Roane State reviewed success outcomes in their 20 courses that highlighted enrollment, most of which were program gateway courses, and discovered that nearly all students had increased since 2013. However, when the college disaggregated the data by race and ethnicity, it found gaps in success outcomes between White students and African American and Hispanic students still persisted. After this discovery, Roane State devised an action plan to address the concern. The college decided to work on a Quality Enhancement Plan to increase collaborative and real-world learning in the classroom. The college planned to ensure that first-generation and other underrepresented students, particularly, encounter these learning opportunities. In the fall of 2018, Roane State was expected to pilot a special topics section of ENGL 1010: Composition I, focused on the theme “Representation Matters,” in which issues of race and the media would guide course readings, assignments, and discussions. The course was supposed to be advertised in the schedule as focusing on these topics, and college staff was encouraging students to enroll. The college also planned to examine the results of learning outcomes assessments more closely to improve teaching and learning for underrepresented students. It also planned to take steps to ensure that

its online learning environments were working for all students who take online courses.

However, since this was reported in 2018 and COVID-19 happened in 2020, the researcher could not find updated information on whether or not Roane State followed through on its action plan.

The same study by Jenkins et al. (2018) indicated that for the fall 2015 and fall 2016 cohorts from the community college Tennessee State System, after a period in which KPIs improved and were steady, the colleges saw substantial increases in most KPIs. The rates for African American and Hispanic students started from a lower base. Still, later on, KPI measures for African American and Hispanic students increased even more than for Whites in percentage terms, but there remained achievement gaps between those students and White students (Jenkins et al., 2018).

The study also showed promising gains in most KPIs from 2010 - 2016 for African American and Hispanic students. However, since percentages change over time and when KPIs were examined by race on students completing 12+ credits their first term and completing 24+ credits their first academic year, percentages changed over time, and percentage point equity gaps remained in 2016. KPIs for these students also fared low in 2010. The researchers stated that even though some of the results of the African American and Hispanic students improved in KPIs and were encouraging, college leaders must still consider the equity gaps that remained in 2016, which ranged from 2% to 24% points. For instance, for African American, Hispanic, and White students, the share of students receiving 12 or more college credits in their first term and 24 or more credits in their first academic year climbed significantly from 2010 to 2016—upwards of 100% in several situations. On these KPIs, however, there were still performance disparities in 2016 between African American and White students of about 20% points and between Hispanic and White students of about 10% points.

However, TBR community colleges significantly increased the KPIs for African American and Hispanic students' completion of gateway courses. Throughout the tracking period, African American students' completion rates for gateway courses in college math, college English, and both first-year courses rose by 422, 450, and 516%, respectively. However, there were still significant equity gaps in gateway course completion between African American and White students at the end of the tracking period, which was approximately 11 and 17% points. Notably, between 2010 and 2016, the TBR community colleges narrowed the African American-White disparity in first-year college English completion by 18% points, with the majority of this reduction occurring between 2014 and 2015. However, the fall 2016 cohort gap was still at 11% points.

Furthermore, the disparity between African American and White students remained substantially unchanged between 2010 and 2016, despite improvements in overall rates of gateway math completion for African American students. Since the Hispanic-White disparities were lower at the onset (relative to the African American-White gaps), the colleges had better success eliminating these gaps, which led to significant improvements in the completion of gateway courses among Hispanic students. Lastly, for each of the gateway course completion KPIs, the Hispanic and White disparity in the fall 2016 cohort was only at 2% points.

According to the researchers, CCRC intended to administer the Scale of Adoption Assessment at all 13 campuses at TBR in 2019 and 2020. Additionally, the researchers indicated that CCRC will continue to monitor the community colleges in Tennessee's efforts to implement completion reforms. However, no further studies have been published recently on any updates regarding the Scale of Adoption Assessment from 2019-2020 at TBR. Jenkins et al. (2018) indicated that CCRC will also keep using unit record data from TBR to determine if the colleges'

early momentum KPIs were improving and whether these indicators eventually resulted in higher completion rates and further closed equity gaps. Jenkins et al. (2018) suggested that by combining these two data sources, they may be able to distinguish how changes in student composition and college practice changes affect KPIs. The studies above have shown how institutions implementing guided pathways and tracking EMMs early have seen some progress toward student success. Still, the survey by Belfield et al. (2019) and Jenkins et al. (2018) demonstrated continued performance disparities among African American and White students in higher-education, which points to much-needed reform.

Credit Momentum

Attewell and Monaghan Study (2016)

In 2016, Attewell and Monaghan conducted a study on credit momentum using the Beginning Postsecondary Students Longitudinal Study, which followed nationally representative data on student first-year students starting in public two-year colleges and public or private nonprofit four-year colleges from the 2003 – 2004 academic year. Students were interviewed in 2004, with follow-up interviews occurring from 2006 - 2009, and transcript data from the institutions used in the study were collected to match the student interview data. A propensity scoring matching method was used to reduce bias. Attewell and Monaghan (2016) asked, “How many credits should an undergraduate take?” Attewell had three reasons why academic momentum could significantly impact college completion. The first reason was he thought intense enrollment brought a student into more regular contact with professors and fellow students, augmenting students' integration into the social and academic life of their college (Attewell and Monaghan, 2016). The second reason was that rapidly attaining credits could increase “one’s sense of efficacy and academic self-concept” (Bong and Skaalvik, 2003),

supporting commitment to degree completion (Attewell and Monaghan, 2016). Lastly, Attewell concluded that an enormous course load could effectively “crowd out” other attachments, such as those at work and in peer groups, which would otherwise garner more attention and discourage the devotion of effort towards schooling. Astin's 1984 (1999) theory of student involvement, which emphasizes channeling students' time toward educational pursuits as a means of augmenting the depth of their academic focus and, consequently, their commitment to completion, was aligned with the momentum perspective, according to Attewell and Monaghan (2016).

The findings from the study revealed that students taking 15 credits in their first-semester graduate at a significantly higher rate within six years of initial enrollment. Students taking 12 credits were 9% less likely to earn any degree and 5% less likely to complete a bachelor's degree within six years. Then students who attempted less than 15 credits in their first semester but increased to 15 credits in their second semester were significantly more likely to earn a bachelor's within six years than those who continued to attempt less than 15 credits. The outcomes were also significant for students of color and those with subpar academic skills (Attewell & Monaghan, 2016).

The results of the Attewell and Monaghan (2016) study highlighted performance disparities between African American and White students in their first academic year. The descriptive statistics mean for community college students who attempted credits their first semester showed that African American students who earned 6credits were at 12.24%, 9credits at 12.75%, 12credits at 10.81%, and 15credits at 8.51%. Compared to White students, they achieved significantly higher attain of these credits. White students earning six credits were 59.46%, nine credits at 58.17%, 12 at 68.85%, and 15 at 70.57%. These results demonstrate a

significant performance disparity between White and African American students in their first academic year at a community college.

Also, in the Attewell and Monaghan (2016) study, characteristics of household income and parent education were included to provide socio-economically advantages students may have. According to the results, White and younger undergraduate students were the ones who took more credits in their first semester, were more affluent, and were more likely to have college-educated parents. Compared to African American students, this group attained fewer credits in their first semester than White students; African American students' parents were less likely to have an educational-parent household. The study illustrated that African American students did not have the socioeconomic advantage of White students. However, the researchers in this study removed bias factors regarding students' backgrounds through the process of Propensity Score Matching (PSM). PSM allowed “researchers to estimate the effect of a “treatment” by comparing treated and control groups balanced in measured characteristics.

According to the Attewell and Monaghan (2016) study, when students took fewer credits, it appeared detrimental to their academic performance outcomes. African American/Latino students seemed to suffer a slightly more significant penalty at 10 % points than White and Asian students at 4.6% points. Also, students with subpar academic preparation in high school seemed to be affected more at 8.4% than their counterparts with more robust high school preparation at 2.5% points. The study showed that the differences in treatment effects between groups were not statistically significant, according to an analysis of the standard errors. Still, it was suggestive that disadvantaged groups (students of color) were generally more affected by various credit loads. Attewell and Monaghan (2016) found no benefit for students taking 15 credits with rigorous work schedules, but students who worked fewer than 20 hours per week gained

somewhat from a higher credit load. The research suggested that the likelihood of graduating among employed students was less sensitive to variations in the number of credits taken in the first semester.

In conclusion, when descriptive statistics was used, it depicted that even when entering college, undergraduates who attempted a wide range of course credits, students from underprivileged backgrounds, and those who were less prepared academically tended to enroll in fewer courses in the beginning. The study showed that initial course load was a key mechanism through which social inequality influences educational inequality, along with a strong bivariate link between early enrollment intensity and collegiate achievement.

Another conclusion in the study was that when Attewell and Monaghan (2016) used a multivariate model, it revealed that the number of credits taken in one's first semester influenced the student's likelihood of finishing their degree, subject to a wide range of observable criteria. The impacts were significant and more pronounced at community colleges than at 4-year institutions. Then when student background characteristics were examined, full-time community college undergraduates who enrolled for 12 instead of 15 credits had approximately a 9% point lower likelihood of graduating with a degree and a 5% point lower chance of obtaining a bachelor's degree within six years. Additionally, the subgroup analyses showed that minority and first-generation students benefited from the more significant credit load at least as much as, if not more than, White students and those from more affluent homes.

Belfield, Jenkins, and Lahr Study (2016)

Belfield, Jenkins, and Lahr (2016) also conducted a study on credit momentum funded by the Guided Pathways to Success project led by Complete College America and supported by the Lumina Foundation. The researchers wanted to investigate the academic and financial effects of

students taking various credits in their first semester. Belfield et al. (2016) used transcript data from the Tennessee Board of Regents' two and four-year institutions on first-time college students from the 2008 cohort who attempted at least 12 credits in their first semester. The study explored estimated differences in award completion and credit accumulation across students according to their first-term and first-year credit loads. To account for variations in student characteristics, Belfield et al. (2016) used Propensity Score Matching (PSM) estimation and the Ordinary Least Squares (OLS) method. The researchers also used an economic model to estimate improvements in cost per completion (i.e., cost efficiency) and additional spending by students who took 15 credits in their first semester, considered “momentum students” versus students who took 12 credits.

Belfield et al. (2016) discovered significant favorable academic outcomes on credits earned and degree completion for momentum students enrolled at community colleges and four-year colleges. After six years, first-year momentum community college students who attempted at least 27 credits earned 22 more credits and were 18% points more likely to earn a degree or certificate than non-momentum students who attempted at least 12 credits in their first year but less than 27 credits in year one. Also, first-year momentum students in community college paid 20% less per degree in tuition and fees, and their college expenditures were 14% less per degree. On average, Community college momentum students generated \$1,740 more in tuition and fees than non-momentum students. The study showed that community college and four-year students could benefit financially from these effects: momentum students paid 4–14% less for each credit and 9–19% less in tuition and fees for each degree throughout their careers. The researchers also suggested that these savings benefit colleges because more tuition income was collected when more students persisted. The study also revealed that students who maintained momentum during

their first year had even greater academic and financial benefits. However the study also illustrated that African American students in both sectors were less likely to be momentum students, and when compared to White students, disparity gaps were displayed. White students in community colleges earned 12 credits their first semester at 80% points, first-semester momentum at 81% points, less than 26 credits at 80% points, and first-year momentum at 80% points. However, compared to White students, African American students showed a significant decrease. African American students in community college earned 12 credits their first semester at 11% points, first-semester momentum was at 7% points, less than 26 credits at 10% points, and first-year momentum at 9% points. The researchers suggested that minority students would significantly benefit if they maintained momentum during their first year, both academically and financially.

Crosta (2014), Boston (2021), and Bragg & Krismer Studies (2016)

There was also a study conducted by Crosta (2013) that outlined the three major factors that cause a variation in the number of credits earned by African American students against White students. The following were the three key factors affecting the success rates of African American students to earn six or more credits in community colleges: (1) family background, (2) learning environment for day scholars, (3) the availability of learning materials; thus, should not be used as an assessment tool for student performance of the entire college course.

Family Background. Crosta (2013) and Boston (2021) found that family background was critical in determining the number of students attaining six or more college credits in their first term after enrollment. The study revealed that African American students' performance was affected by family issues such as low socioeconomic status compared to White students. The study added that most African American students in community colleges come from families

facing socioeconomic problems, such as low income levels, which delay their enrollment. From the Crosta (2013) and Boston (2021) study, there were also findings from Bragg & Krismer (2016) also disclosing that the family background of African American students was a significant challenge that affects student enrollment in community colleges compared to White students.

Consequently, this issue reduces the number of African American students earning six or more college credits compared to White students. However, Bragg & Krismer's (2016) findings indicate that students (both African American and White) who do not encounter socio-economic issues were likely to earn six or more credits. These findings indicated those socio-economic issues were a vital indicator of measuring the possibility of African American students earning more credits in their first year of enrollment.

Learning Environment. Crosta's (2013) and Boston's (2021) research findings revealed that the learning environment was crucial in determining college students' completion. The findings further state that many components of a learning environment affect students' chances of earning more credits in the first year of the domain. These components include culture, ethnic background, and socioeconomic factors that infuse the learning environment of college students. Bragg & Krismer (2016) argue that poor learning environments adversely affect the success rate of African American students earning six or more college credits in the first semester of enrollment. Most African American students face difficulties earning six or more credits in their first year of enrollment due to cultural practices and beliefs. As a result, their success rates in their college education were relatively low compared to White students who, in most instances, study in a better-controlled learning environment. Additionally, the findings of Bragg et al. (2016) confirm that their learning environments significantly influence the success of African American students.

Availability of Learning Materials. On the other hand, the research findings of a study conducted by Bragg et al. (2016) divulge that the availability of learning materials directly influences African American students' chances to earn six or more college credits in the first and subsequent terms. According to Bragg et al. (2016), African American students in community colleges face the challenge of accessing learning materials, unlike White students, thus adversely influencing the possibility of earning six or more college credits in the first and subsequent terms. Conversely, White students earn more college credits in their first and following terms because they can access many reliable learning materials, unlike other minority groups like Hispanic and African American students.

According to Crosta (2014), the chaotic enrollment patterns of community college students directly influence African American students' performance and success rates. Crosta adds that although many students, especially White students, earn six or more credits in the first term of enrollment at community colleges, some obtain higher grades. In contrast, others earn low credits in the subsequent semesters. The main reason for the variance was the change in motivation factors that encouraged students to work hard to achieve higher credits. For example, students learning in conducive environments at school and home report good performance in the first year until their last college courses. The U.S. National Center for Education Statistics (2021) research reveals that African American students were among the unlucky students to report high performance during the first year of enrollment in community college. The study's finding adds that students from minority groups like African Americans face socio-economic challenges that directly affect school performance. The number of credits community college students earn depends on how much time they allocate to their studies.

Teachers College, Columbia University Study (2021)

Moreover, a research finding by Teachers College, Columbia University (2021) provided student enrollment in community colleges by race and how it affects the success of students. During the 2018-2019 academic year, the admission of students in community colleges was 7% Asian, 45% White, 25% Hispanic, and 13% African American. American Association of Community Colleges (AACC) analysis of the Integrated Postsecondary Education Data System data shows that students enrolling in community colleges register a minimum of 12 credits during their first year. AACC data reveals that White and African American students' admission to community colleges has increased progressively since 2005. Over the past decade, the number of White students enrolling in community colleges has been more than African American students. However, the number of African American students enrolling in community colleges in the United States has been increasing over the past few years.

In conclusion, many studies revealed that the number of African American students earning six or more college credits was few compared to White students. The main factors that affected the possibility of students earning more college credits included family background, learning environment, and the availability of learning materials. The Teachers College, Columbia University (2021) study indicated that these factors mainly affect African American students and other minority groups compared to White students. Different research and scholars' findings suggested a significant difference in students earning six or more college credits in the first term by race.

Gateway Momentum

The following section focuses on the completion of gateway momentum. The review of the forthcoming information includes various sources.

According to Buckles et al. (2019), African American students studying in community colleges were likely to succeed in their college courses if they completed gateway math and English courses. Ran & Lin (2019) stated that these courses directly influence students' learning outcomes in college; thus, they should complete them in their first year of college. Buckles et al. (2019) indicated that all college students majoring in any discipline must pass all gateway courses to offer them the basis for advancing their career goals.

Teachers College, Columbia University Study (2021)

A study conducted by Teachers College, Columbia University (2021) revealed that math and English were gateway courses because they help students earn better grades and succeed in college careers. Over the years, community colleges have adopted various measures to encourage the completion of gateway courses, particularly math, and English, in the first year to increase the number of students completing their college studies (CCRC, 2021). Some of these measures included but were not limited to Completion by Design, Guided Pathways, Angie Pathway, and AACC Pathways Project (CCRC, 2021). According to Teachers College, Columbia University (2021), completing gateway math and English courses in the first year of admission decreases attainment gaps in the completion of college courses by race. According to the research, completing gateway subjects, particularly math and English, plays a crucial role in improving learners' competencies to equip them with the ability to advance their study abilities.

Calcagno, Crosta, Bailey, and Jenkins Study (2007)

Calcagno, Crosta, Bailey, and Jenkins (2007) completed a study on the experiences and gateway momentum outcomes focused on older and younger community college students between the ages of 17 and 65. Another characteristic of the first-trimester students was race. Younger African American students were at 16.59%, and older were at 18.84%, making a

difference of -2.25. Younger White students were 60.48%, older were 62.31%, and the difference was -1.84 (Calcagno, Crosta, Bailey, et al., 2007). The researchers developed a discrete-time hazard model using longitudinal transcript data on 42,641 first-time degree-seeking college students who were enrolled at one of Florida's 28 community colleges in the fall of 1998-99 and were tracked for six years through the spring of 2004 (Calcagno, Crosta, Bailey, et al., 2007). These students were enrolled in college-credit courses and followed by using the event history statistical modeling empirical method. The study compared the impact of enrollment pathways focused on remediation and enrollment milestones that included attaining a certain number of credits on educational outcomes of older students who entered college for the first time at age 25 or later with those of traditional-aged students (Calcagno, Crosta, Bailey, et al., 2007). The key findings in the study showed that students who started in remedial math and passed a college-level math course were more than twice as likely to graduate in any given term than students who did not pass college math by that point (Calcagno, Crosta, Bailey, et al., 2007). Another finding was that passing college-level math was solid for younger students under 25 (Calcagno, Crosta, Bailey, et al., 2007). Lastly, the study found that African American students were less likely to complete a degree or certificate during the estimated odds ratios for hazard models with completion as the outcome. The study also revealed students who were female and high school diploma holders were likely to graduate in each period, unlike African American students who were less likely to complete a degree or certificate during the event period.

Denley Study (2016)

In 2016, Denley published his study on gateway momentum called “Choice Architecture, Academic Foci, and Guided Pathways” (Denley, 2016). Denley explored the initial impact of

how students determine their program of study. Choice Architecture was used to provide a direct and more minor pathway of program choices for students through behavioral economics science, which was embedded in the guided pathways model. This theory suggested that students become confused when too many options are given and are less likely to succeed. Tennessee modified their choice architecture for their students so they could choose from a smaller set of programs to increase student success. The Tennessee Board of Regents, with the support of their academic leaders and faculty groups, created the nine academic foci, which provided a guided structure of choice for their students in the following programs: Applied Technology, Arts, Business, Education, Health Professions, Humanities, Social Sciences, and STEM. In addition, General Studies were added for undecided students. This guided structure was similar to the guided pathways model.

Denley (2016) used transcript data on first-year students entering TBR two-year colleges from fall to spring from 2009 through 2016. To conduct the study, Denley analyzed Tennessee Board of Regents (TBR) system-wide data. The study examined student persistence over three academic years for students who began without a chosen major and explored how students choosing their major might correlate with persistence. A descriptive statistics method was used, and the findings from the community college students indicated that 48% of the Tennessee community college students who completed English Composition I and II and a college math course in their first year earned a college credential within six years, compared with 18% of students who did not complete these three courses in their first year (Denley, 2016). Denley also discovered that over the three years, it took to implement and sustain guided pathways reforms in Tennessee, the number of community college students who passed college-level English and math pathway courses in their first year increased by 79%, from 10% to 18% for all students then

increased by 240%, from 3.5% to 12%, for students of color (Denley, 2016). The research indicated how the effects of implementing guided pathways were more pronounced for the minority student population, doubling the proportion of students attempting and those earning 9 hours in their focus since 2012-13. The study revealed an 81% increase for incoming minority community college first-year students achieving at least 9 hours in their direction during their first academic year. This discovery in Denely's study showed how gateway momentum can be used to indicate the effects of guided pathways reforms in a short time.

Leinbach and Jenkins Study (2008)

Another study focused on gateway momentum by Leinbach and Jenkins (2008), entitled “Using Longitudinal Data to Increase Community College Student Success: A Guide to Measuring Milestone and Momentum Point Attainment.” The researchers used transcript data on more than 87,000 first-time college students at Washington State Board for Community and Technical Colleges from the 2001-02 academic year. They were tracked for over five years (Leinbach et al., 2008). The researchers used demographic, education, and labor market outcome data to complete their analysis. To conduct the study, the researchers used descriptive statistics and Ordinary Least Squares (OLS) regression to assist in identifying momentum points and milestones for different groups of students (Leinbach et al., 2008). The student groups consisted of the type of program in which the students entered by their educational objective upon entry. Also, each student group had its own milestone events in a student enrollment pathway, including ESL, ABE, developmental, college level, vocational, and transfer. The study also depicted the potential momentum points by student groups in their research (Leinbach et al., 2008).

The Washington system transformed its institutions to track and improve student enrollment and achievement by examining these student groups, their milestones, and momentum points, and the researchers wanted to discover if the new system was promising. The findings disclosed that 71% of students starting in transfer programs who finished a college-level math course completed a certificate or associate degree or transferred successfully within five years, compared with 11% of those who did not pass college math (Leinbach et al., 2008). Also, 52% of students starting in transfer programs who completed a college-level English course completed a certificate or associate degree or transferred successfully within five years, compared with 17% of those who did not pass college English (Leinbach et al., 2008). Then, the researchers found that conditional effects were statistically significant (Leinbach et al., 2008). Lastly, when the results were disaggregated by demographics such as race, African Americans had a positive statistically significant outcome in ABE. Still, they had a negative statistically significant effect on pre-college and transfer readiness.

In conclusion, the logistic regression findings in this study show support for the relationship of many momentum points with milestone achievement for their respective student groups (Leinbach et al., 2008). However, the research also showed that higher education leaders cannot suggest that momentum point attainment was the reason for student milestone achievement since individual motivation or other characteristics that correlate with momentum point and milestone success could also contribute (Leinbach et al., 2008). But obviously, students must attain specific momentum points to increase their chances of achieving educational milestones.

Teshima Study (2019)

Another study conducted by Teshima (2019) sought to research the differences in low-income East Asian and Southeast Asian community college students' ability to meet the guided pathways momentum point achievements and explore the stereotype that Asians naturally excel in academia. The researcher examined low-income East Asian and Southeast Asian community college students who received Pell Grants. The momentum points measured in this study was through four guided pathways key performance indicators identified by the California Guided Pathways Project. "These indicators were (a) the number of college credits earned by students in their first term; (b) the number of college credits earned by students in their first year; (c) college-level math completed in their first year, and (d) college-level English completed in their first year " (Teshima, 2019).

The researcher conducted a quantitative causal-correlational study. The researcher also used a predictive model, not only to attempt to examine whether there was a relationship between the variables but also whether certain variables predicted the outcome. The researcher used a series of chi-square and logistic regression analyses to determine if there were statistically significant differences in the academic performance of low-income East Asian and Southeast Asian community college students. The methodology explored five research questions, with the first aiming to determine whether Asian community college students of Asian descent were more likely to be low-income than their East Asian counterparts. The second, third, and fourth research questions sought the relationship between Southeast and East Asia and momentum point achievements. In the last research question, the scholar purposed to analyze the relationship between meeting the momentum points and accomplishing milestone goals among Asian students.

This study collected data on 720 first-time students starting in the fall terms of 2011, 2012, and 2013 who self-identified as Asian from a public, multiple-district California Community College campus (CCCO) (Teshima, 2019). Three hundred fifty-two students identified as East Asian, and 368 were Southeast Asian. Three hundred ten received Pell Grants, and 410 were Non-Pell Grants. The students were 18 and over, with 639 between 18 and 20. CCCO was a Hispanic-serving college that enrolls over 15,000 students each semester, of which approximately 50% of the first-time students identify as Hispanic (Teshima, 2019). “Asian students made about 15% of first-time student enrollment; non-Hispanic White students were about 13%, Filipino students were around 6% percent; African American students and multi-ethnicity students were about 4% percent, and all other racial groups encompassed less than a percent of the first-time student enrollment at this institution” (Teshima, 2019).

The study found two statistically significant outcomes. Southeast Asian community college students were more likely to be of low-income status compared to their East Asian peers, and Southeast Asian community college students who were able to complete a college-level math course within their first year of enrollment had better odds of earning a certificate or degree. The first question’s chi-square test results found that 63.59% of students of Southeast Asian descent benefited from the Pell Grant, while 21.59% of East Asian students did. The results were statistically significant, showing that students of Southeast Asian descent were more likely to be categorized as low-incomers.

In the second question, chi-square test results showed that 5.98% of Southeast Asian students and 6.81% of East Asian students accumulated 15 or more units in their first term. Additionally, 4.62% of Southeast Asian students and 5.11 % of East Asian students completed 30 or more credits in their first year of enrollment. Therefore, the researcher found no statistical

significance in the unit accumulation rate among the East and Southeast Asian community college students.

In the third question, chi-square test results showed that 33.42% of Southeast Asian students and 28.41% of East Asian students completed college-level math in the first year. Teshima (2019) then concluded that there was no significant difference in college-level math course completion.

In the fourth research question, chi-square test results showed that 14.67 % of Southeast Asian students and 19.89 % of East Asian students passed the college-level English course in the first year. The researcher then concluded that there was no significant difference in college-level English course completion among the East and Southeast Asian community college students.

In the last question, the Southeast Asian student's AsianCrit model brought a 10.3% variance regarding earning a certificate or degree. Therefore, the student's college-level math success was a statistically significant predictor of attaining a diploma or degree. Southeast Asian students who succeeded in college-level math within their first year were .29% more likely to earn their degree. However, the AsianCrit model of East Asian students showed no statistical significance since none of the variables, including first-term and year unit accumulation and college-level math or English course completion, established a relationship with the student's ability to earn a degree or certificate. Lastly, another key finding in the study was potentially low-income community college students struggle to meet the crucial momentum points leading to milestone accomplishments. This study highlighted some similarities between Asian and African American students regarding being stereotyped, lacking personal support, and the disadvantages of being low-income. Again this study points to the need for more reform efforts to improve success rates for students of color.

Persistence

Community College Students

The forthcoming section of the literature review discusses student persistence from fall to spring. Various scholarly resources were examined on student persistence from fall to spring. According to the American Council on Education (ACE) (2010), a college education is a process that requires commitment and persistence to improve student outcomes.

Research conducted by the National Student Clearinghouse (NSC) in 2021 revealed that community colleges' enrollment has declined to about 97% of expected rates (Boston, 2021). Boston (2021) added that the persistence rate of students enrolling or re-enrolling in community colleges has declined over the past decade. For instance, the National Student Clearinghouse (NSC) data revealed that in 2019, only 74% of first-year students in community colleges returned for second-year courses. The change represented a 2 % decline from the persistence rate reported in 2009.

Among many studies conducted by the National Student Clearinghouse (2021), community college students, especially African American students, report the steepest annual decline of 3.5%, with an approximate re-enrollment rate of 58.5%. However, there was a general decline in persistent students in community colleges. Boston (2021) reported that first-year students transferring from one college to another declined from 9.2% to 7.97%. The study implied that many White and African American students enrolled in community colleges finish their studies in community colleges they enrolled as first-time admissions. Furthermore, another study by National Student Clearinghouse (2021) confirmed a significant difference between fall-to-spring persistence and community college students' retention rate. A study conducted by Brookings in 2018 revealed that the persistence rate of full-time students was higher than part-

time community college students. For example, out of the 73.9% persistence rate reported in community colleges in 2018, full-time students persisted at 81%, while part-time persisted at approximately 48%.

African American Students

Then Levesque (2018) discussed a notable persistence gap between students by race and ethnicity. African American students reported a low persistence rate of 65% annually compared to White students, who reported a 79.5% persistence rate annually. The National Student Clearinghouse highlighted the persistence and retention rate gaps by race and ethnicity from the fall 2019 cohort in higher education (NSC, 2021). This data included continued enrollment at other colleges and the same college. According to the data, the 2019 cohort gap remained as comprehensive as the previous cohort years, with a 22% point gap between the highest students at 86.5% for Asians and the lowest African American students at 64.9% (National Student Clearinghouse, 2021). The White students were 79.3% and Latinx at 68.6%, reflecting a gap of nearly 11% (NSC, 2021). The data revealed that most students persisted and returned to their same college regardless of race. However, the data also indicated that White (9.7%) and African American (8.8%) students were more likely to transfer out during their first year (NSC, 2021). Even though Latinx students fared very low, the data illustrated performance disparities between White and African American students.

Bensley Study (2018)

Bensley (2018) attempted to provide findings on persistence among students enrolled in a guided pathways program in a mixed-methods study on college self-efficacy and persistence among first-time, full-time community college students enrolled in a guided pathways program and students not enrolled in a guided pathways program. The researcher wanted to examine the

relationships among indicators of success in college, college student self-efficacy, and participation in programs that help students succeed in college. The researcher wanted to know if these factors could improve success rates and persistence in post-secondary education. Bensley (2018) focused on the Aggie Pathway program, modeled after the guided pathways concept. Aggie Pathway allows students to transfer from Dona Ana Community College to a four-year college in the New Mexico State University system so students can obtain a baccalaureate degree. The program predominantly impacts Hispanic students because New Mexico State University is a Hispanic-serving institution. The program was for students not meeting the admission requirements to attend a four-year college in the New Mexico State University system.

Bensley (2018) tracked fall 2016 to spring 2017 Aggie Pathway students with a high school GPA of 2.749 or lower who were enrolled in a learning community or College 155 (Aggie Pathway Seminar Course) and compared that group to first-time, full-time students with a high school GPA of 2.749 or lower who were not in the Aggie Pathway program, but enrolled in a major that most would require transfer to a four-year college to complete a baccalaureate degree. In the quantitative section of the study, analyses examined college self-efficacy among Aggie Pathway and non-Aggie Pathway students to determine the degree of correlation between the independent continuous variables of college self-efficacy scores in course work and social constructs and the dependent binary variable of persistence. The researcher defined college self-efficacy as a student's confidence in their ability to successfully navigate the college experience, including aspects relating to their coursework and social environments. The proportion of students who remained enrolled from the fall 2016 semester to the spring 2017 semester was examined using a chi-square test of homogeneity to see if it differed between students who took part in the Aggie Pathway program and those who did not. The level of significance utilized was

0.05. if the p -value for the chi-square test was equal to or greater than the level of importance would indicate there was no relationship between the Aggie Pathway program and retention to the next semester. For the qualitative section of the study, Bensley (2018) used e-mail interview questions. Bensley (2018) used phenomenological research comparing Aggie Pathway community college students and non-Aggie Pathway community college students to survey their impression or awareness of the Aggie Pathway and other services to help them persist from semester to semester.

The Bensley (2018) study demonstrated a weak relationship between social self-efficacy and persistence. The results from the chi-square test revealed the outcomes of the students who persisted from the fall 2016 semester to the spring 2017 semester for students who participated in the Aggie Pathway program and students who did not participate. The level of significance was only 0.05. The Aggie Pathway students persisted slightly more than non-Aggie Pathway students at 84.3%. The findings from the study showed that the Aggie Pathway program students persisted to the spring 2017 semester more than non-Aggie Pathway program students. This demonstrates that guided pathways programs positively influence student success rates, even though there was a modest improvement in results for Aggie Pathway students.

Miller-Galaz Study (2018)

Another study that focused on persistence was by Miller-Galaz (2018). Miller-Galaz (2018) conducted a qualitative case study on Hispanic male persistence at a California Community College. The community college services 4,134 students, 81.7% were minority students, and 60.9% were first-generation. The California Community College was a Hispanic-Serving Institution (HIS), with Hispanic/Latino students comprising 73.6% of the student body

(Miller-Galaz, 2018). The researcher conducted the study through interviews, an online survey, and public college information accessible to the researcher.

In Miller-Galaz's (2018) study, the researcher pointed out some significant critical findings from their research that resonated with analysis from this study. These findings were regarding the performance gaps between minority students, but for Miller-Galaz's (2018) study, the focus was on Hispanics and White students and stereotypes associated with people of color. According to the researcher, while minority students (including Hispanics and African American races) enrollment has increased over the years, the achievement gap has not closed; the Hispanic students' achievement rate remained at 28% below White students (Miller-Galaz, 2018).

The researcher also discussed the “minority comparison model” in an academic setting. According to Miller-Galaz (2018), “the minority comparison model was the myth that a class of persons artificially grouped by ethnicity were typecast based on incorrect and racist stereotypes.” The minority myth inappropriately labels students of color. For example, Asians were hardworking students, Hispanics were considered illegal immigrants, and African Americans were characterized as having a low work ethic (Miller-Galaz, 2018). According to the researcher, this model minority myth has “halted cooperation, silenced collective voice, and increased segregation among immigrants” (Miller-Galaz, 2018). The researcher also indicated that the illusion of the minority myth created a deficit approach to giving students of color opportunities. These well-intentioned specialized programs were developed to address social problems and instead produce knowledge silos for students of color. Then when student programs were evaluated for effectiveness, many times, all students of color were combined into a single statistical pool, which dilutes and obscures any valuable results for program changes. Even though initiatives in higher education were creating programs for students of color, they typically

do so based on risky presumptions. When these programs were evaluated, little emphasis was placed on breaking them down and understanding how they affect various demographics. This could also be one of the reasons there were achievement gaps between African American and White students within the guided pathways model.

Miller-Galaz (2018) also stated that social scientists inaccurately believe that students who do not belong to the dominant class (usually White students) face similar difficulties. According to Miller-Galaz (2018), students of color enrolled in community college were traditionally “first-generation, lower-income, and were less likely to earn a degree compared to middle-class White students at the university level.” Miller-Galaz (2018) mentioned that many community colleges implemented interventions to increase the academic success of these students. These interventions included mandatory orientations, first-year experiences, intensive advising, guided pathways, and emphasis on resources, increasing retention and graduation for all students. But despite these strides, an achievement gap exists between White students and students of color, mainly Hispanic and African American males. Miller-Galaz (2018) stated that there was limited research on these two student groups and what factors make a difference in coping with college challenges. The researcher noted that even African American males were more prone to seek support from peers of the same race, while Hispanic males were known to find help from family members (Miller-Galaz, 2018). Miller-Galaz (2018) stated that the achievement gap for completion of students of color, specifically Hispanic males attending community colleges, was essential to consider. According to Miller-Galaz (2018), 11.8% of the Hispanic population in California had a baccalaureate degree compared to 41.7% of the White population (not Hispanic or Latino) and the Asian population at 50.4%.

Because of these performance disparities and minority myths, Miller-Galaz (2018) wanted to answer the following questions

1. What do non-traditional Hispanic male students attribute to their persistence in
 - a. community college compared to many of their peers, who do not persist?
2. What do non-traditional Hispanic male students attribute to not persisting in
 - a. community college?
3. How do college administrators feel that the college was supporting the non-traditional
 - a. How do Hispanic students align with the access and use of these services by non-traditional Hispanic male students?

The researcher used critical race theory as their theoretical framework. The framework of critical race theory allowed the researcher to possibly investigate the institutionalization of racism and inequities in education, apply social justice, and acknowledge how white supremacy has shaped the educational curriculum. The theory also contests the influence of racism on administrative discourses and educational practices, both implicitly and overtly.

461 Hispanic males were examined in this study who attended a California community college. Data was collected through interviews, and a cross-sectional online survey. 11 Hispanic male students and two college administrators were identified and interviewed through purposeful sampling. The two administrators were asked questions about the college and provided data on the college. 450 Hispanic males received the cross-sectional online survey with a 3% response rate. These students were first-time, first-generation, low-income students who did not acquire a degree or certificate from a community college or university and were over 24 years of age. They were divided into two groups. Group one was persisters, and the second group was non-persisters. These students were interviewed through an online survey and public college

information accessible to the researcher. The case study approach allowed the researcher to focus on understanding how the various retention programs' intended outcomes were incorporated into the Hispanic students' college experience. The researcher could directly observe and interact with the Hispanic community college students, and their lived experiences were analyzed. To guide the study, the researcher used a Constructivism-Interpretivism research paradigm.

Constructivism-Interpretivism is a form of qualitative research that explores the uniqueness of human experiences through the rich perspectives of the stakeholders and shares a common intellectual heritage.

The results from the study showed the retention and success rates of Hispanic students enrolled in developmental math and English at the California community college. The retention results were from the fall 2015 cohort from fall 2015 to spring 2016. The Hispanic students showed a lack of success in basic math and English. According to Miller-Galaz (2018), these results discourage students from persisting in an intended degree or certificate. Also, among students who did succeed in these courses, persistence in higher-level coursework was challenging. The researcher insisted that these students were unprepared for college (testing in remedial math and/or English) and were less likely to achieve completion metrics than college-prepared students who earned 30 units (69.4% unprepared vs. 75.8% prepared). The researcher also discovered an even more drastic difference in the percentage of successful degree and transfer-seeking students. Unprepared was at 41.4%, and prepared was at 77.3%. In terms of the participants interviewed in the study, the findings showed that out of the 11 students, only four persisted.

The results from the Miller-Galaz (2018) study showed a variety of variables that affected whether or not Hispanic males persisted in community college. The Hispanic males that

did persist in the study were attributed to strong family support, societal expectations to provide for a family, and a personal drive to improve one's circumstances. Hispanic males that did not persist were attributed to several reasons: low or no utilization of college resources, work-related demands, and low educational capital. According to Miller-Galaz (2018), the results were essential for community college administrators who want to improve male Hispanic students' graduation and retention rates. The researcher also suggested more research was needed to pinpoint the institutional characteristics and educational practices that require the most significant potential to improve the success of Hispanic students.

In summary, there was an undesirable trend in the persistence of first-time and minority students in community colleges. Community college students, especially African American students, report the steepest annual decline of 3.5% (ACE, 2019). The National Student Clearinghouse (2021) data also revealed continued performance disparities between African American and White students regarding persistence and retention. A college education is a process that requires commitment and persistence to improve student outcomes, and hopefully, college leaders can help improve these academic performance gaps (ACE, 2019).

Factors that Improve African American Success Outcomes

The previous section discussed studies focused on EMMs (credit accumulation, completion of gateway math and English, and persistence from fall to spring) and how primarily African American students were faring in these outcomes. Those studies shed light on the continued performance gaps between African American and White students. The forthcoming section provides insight into factors that improve African American student outcomes. Some of the research was antiquated because most current research only focused on what factors create barriers for African American students.

Sense of Belonging

According to the literature, one of the main factors that improve success outcomes of African American students is the “retention construct of a sense of belonging,” which aligns with some of the work from Tinto, Bean, and Astin (Hurtado & Carter, 1997). A sense of belonging was also embedded in the guided pathways model. The literature indicated that African American students perceive their college environment to be less supportive than White students and were thus less likely to persist to graduation (Carey, 2004; Kinzie et al., 2008; Pascarella et al., 1986). African American students achieving an adequate sense of belonging can produce positive results, but according to the research, failure to develop a sense of belonging can have significant negative consequences (Hausmann et al., 2007; O’Neal, Jr., 2012, p.46). The challenge for African American students to accomplish a sense of belonging can “encourage the emergence of identities opposed to the dominant culture of an institution, thereby increasing the likelihood of feelings of alienation and subsequently oppositional behaviors” (Ellis, 2002; Perrakis, 2008, p. 20). African American students not having a sense of belonging has a dramatic impact on the successful outcomes of these students. The findings from the research showed that African American students who “reported more involvement behaviors in their first year of college also reported higher levels of academic and social integration, as well as an increased institutional commitment” (Hausmann et al., 2007; O’Neal, Jr., 2012, p. 46). The research lastly indicated it was essential for educators to identify why African American students need a sense of belonging to succeed in higher education. Further research could improve performance gaps between African American and White students (O’Neal, Jr., 2012, p. 46).

Mentorship Programs

Another positive factor contributing to African American students' success is mentorship programs. Traditionally, higher education institutions use mentorship programs to “improve diversity, promote academic resources, and address students’ unique differences to improve student outcomes” (Wise, 2011, p. 25). Programs may differ in the approach to student success, but mentorship programs have shown an ability to increase successful outcomes among African American students (Brittian, Sy, & Stokes, 2009, p. 89). Mentoring provides the student with a leader to act as a sounding board and advocate while the student makes significant life decisions. According to research, African American students “want professor mentors who care about their future and were interested in their education” (Moore & Toliver, 2010, p. 935). Experts also suggested that for African Americans to become engaged in the academic environment, African American students need to see faculty and staff members on campus in leadership roles that reflect their race/ethnicity (Brittian et al., 2009).

Strong Academic Support Services

Another element for African American students to be successful academically is having strong academic support services, which was embedded in the guided pathways model that aligns with the third pillar of the guided pathways model to “help students stay on path” (AACC, 2019). Researcher Bensimon (2007) suggested institutional staff and faculty behaviors were vital variables in African American students’ ability to succeed in college. Research has shown that academic support services are crucial to the success of African American students (Laskey & Hetzel, 2011). Deil-Amen (2011a) concluded, “Institutional agents, rather than student characteristics, play an instrumental role in creating social capital and an environment conducive to African American student persistence” (O’Neal, Jr., 2012, p.46). According to the research,

there is a need to focus on “institutionally-located people” that can impact the success of African American students (Bensimon, 2007; Deil-Amen, 2011b). According to the literature, African American students' decision to enroll in college or drop out was influenced by specific elements of the teacher-student relationship (Myers, 2004; O’Neal, Jr., 2012, p. 48; Wheeless et al., 2011;). However, educators in the subject have yet to pinpoint specific teaching techniques that immediately impact African American students' attitudes about persistence and attrition (Wheeless et al., 2011).

Gaps in the Literature

Community colleges continue to focus their attention on improving student outcomes. The most current initiative working towards this goal is the movement of the guided pathways model. Now colleges obtain support from the American Association of Community Colleges (AACC) for the Pathways Project, which strives to assist community colleges in implementing guided pathways at scale (AACC, 2019). The guided pathways model has demonstrated that structured, well-defined pathways may be the remedy to improve student outcomes and yield countless more college graduates in our society (Scott-Clayton, 2011). However, there is still gaps in the research that illustrate that guided pathways has improved achievement gaps among African American students and White students. According to Jenkins (2018), evidence on student progression and completion rates from early guided pathways implementations showed substantial improvements for students of color. However, because “White students’ achievement has also increased, achievement gaps sometimes persist.” Jenkins stated further that there is still the question of whether or not “guided pathways reforms can be carried out in ways that close gaps in achievement among students by race/ethnicity, income, age, and other factors” (Jenkins, 2018). In addition to concerns from Jenkins (2018), Kubler (2018) mentioned in a report

regarding performance gaps between White and African American students in the model that “if the benefits of guided pathways is skewed toward the former group (White students), then the latter group (African American students) risks not seeing academic improvements or potentially regressing” (Kubler, 2018). This also points to the need for comprehensive data collection and analysis on guided pathways. If the former group shows significant “improvements and the latter group shows no improvement or a slight decline in learning outcomes, it may still be possible to show an overall improvement in school-wide achievement” (Kubler, 2018). Still, more studies are needed to advance the research on guided pathways (Kubler, 2018). Being able to track outcomes based on race is vital to understanding the accurate results of this model.

Based on the literature review, few studies have focused on the successful outcomes of African American students within the guided pathways model. In addition, there are significant performance disparities between African American and White students. Most of the literature regarding guided pathways has focused on the overall success of student outcomes within the guided pathways model or only on how the overall institution was faring by embracing guided pathways. For these reasons, this study is vital to advance the research on how community colleges and experts on guided pathways can better serve African American students and what factors contribute to the success rates of African American students in community colleges.

Summary

This chapter examined the literature on (1) guided pathways; (2) performance disparities between African American and White students; (3) success outcomes of community colleges and African American students; (4) barriers to academic success for most students, and barriers that impact African American students. Then early momentum outcomes were examined, specifically credit momentum, gateway momentum, and persistence from fall to spring. Various studies were

also reviewed on EMMs. Also, factors that improve African American success outcomes were provided. Then lastly, gaps in the literature were discussed. The researcher examined this literature since this study aimed to determine whether there was a significant difference in success rates between African American and White students at community colleges that have embraced guided pathways. The researcher also examined this literature since the researcher selected the guided pathways model as a conceptual framework that supports student success.

The literature revealed that educational attainment remains a challenge for thousands of African American students, and “one of the main functions of community colleges is to provide the academic preparation and college-level courses necessary for students to transfer to a public or private four-year institution to pursue a baccalaureate degree” (Santos & Melguizo, 2008, p. 35). According to the research, a majority of ethnic minorities fall excessively behind their White peers in the completion of an associate degree (Barrett, 2012). Complete College America (2011) reported that the likelihood of graduation for African American and Hispanic students is especially low. The main reason for this difference is the gap between Whites and African Americans and between Whites and Latinos in graduation rates from high school and academic college preparation (Barrett, 2012, p.33-34; Gutierrez & Dantes, 2009; Kuh et al., 2007). Based on the research mentioned in the literature review, guided pathways is intended to improve overall student success outcomes, focusing on creating equity within outcomes by race. However, equity cannot be improved without addressing the one-size-fits-all standard that has been created in most community college initiatives such as guided pathways. Each student is unique, learns differently, and comes from a different background. A college's infrastructure should be designed to be diverse and inclusive of each student a college serves. Hopefully,

educational leaders can find ways to improve student success outcomes to close the achievement gap that still persists between African American and White students.

Chapter 3 - Methodology

This chapter details the research methods used in this study to examine key performance indicators from community colleges that implemented guided pathways to determine if there were significant differences in student success rates by race. In this study, two out of the thirty colleges affiliated with the American Association of Community Colleges Pathways Project (AACC Pathways Project) participated. AACC Pathways Project is a national project dedicated to improving student success rates by assisting colleges in building the capacity to design and implement guided pathways on a large scale (AACC, 2019). Guided pathways is an integrated, institution-wide approach to student success based on intentionally designed, clear, coherent, and structured educational experiences that guide each student effectively and efficiently from her/his point of entry to attainment of high-quality postsecondary credentials and careers with value in the labor market (AACC, 2019). Institutions under the direction of the AACC Pathways Project received grant funding by annually reporting data to the Community College Research Center (CCRC) on the college's KPIs (Key Performance Indicators) in four areas; early momentum college credits earned, completion of gateway math and English courses, persistence, and college-level course completion (AACC, 2017). Pathways Project colleges reported this data to establish a baseline and then monitor student progress as work proceeds on designing and implementing pathways at scale (AACC, 2017).

For this study, the researcher selected four specific AACC Pathways Project KPIs that were measured, which consisted of students earning six or more college credits in the first term, completion of gateway math and English in the first year, persistence from fall to spring, and college-level course completion rates in student's first academic year. The researcher used student success rates and the four KPIs identified in this study interchangeably. This chapter

restates the purpose of the study, research questions with hypotheses, and provides an overview of the research design, rationale, population, sample, and site. Then lastly, the procedures and data collection, analysis, and limitations are discussed.

Purpose

The purpose of this quantitative comparative study was to examine whether there was a significant difference in success rates between African American and White students at community colleges that have embraced guided pathways. Success rates were measured by four KPIs. These KPIs were students earning six or more college credits in the first term, completion of gateway math and English in the first year, persistence from fall to spring, and college-level course completion rates in the student's first academic year.

Research Questions, Design, and Rationale

The following research questions and hypotheses were:

R1. Is there a significant difference in students earning six or more college credits in the first term by race?

H1. There is a statistically significant difference in students earning six or more college credits in the first term by race.

R2. Is there a significant difference in gateway math and English completion in students' first academic year by race?

H1. There is a significant difference in gateway math and English completion in students' first academic year by race.

R3. Is there a significant difference in student persistence from fall to spring by race?

H1. There is a significant difference in student persistence from fall to spring by race.

R4. Is there a significant difference in college-level course completion rates in students' first

academic year by race?

To answer these research questions and hypotheses, a quantitative comparative design using secondary data was utilized to examine differences in success rates based on race. This design allowed the researcher to measure the dependent variable in two or more groups without manipulating the independent variable (Drummond et al., 2023, p.4-5). The research design was based on a non-experimental quantitative design using de-identified, student unit-level data from three Midwest AACC Pathways Project community colleges. However, the researcher only used data from two colleges because the third college did not provide the data required to conduct this study.

Population and Sample

The population in this study was a first-time college student cohort for those students who were enrolled for the first time in college for fall 2017, 2018, and 2019 terms. The sample in the study was secondary de-identified student unit-level data on students enrolled in the following two AACC Pathways Project Colleges: Country College and Capital Community College. Capital was an urban multi-campus community college, and Country was a rural community college. These institutions were given pseudonyms to protect their identity. For this study, the first-time college student fall cohort included fall and spring terms and academic years consisting of 2017-18, 2018-19, and 2019-20.

Site

The sites where the researcher obtained secondary de-identified student unit-level data were Country College and Capital Community College. Country College is a public college in a scenic rural area in Michigan. Over 7,500 students are enrolled at the college, with 41% attending full-time and 59% part-time. 58% of Country College students are female, and 42% are

male (JCC, 2022). The minority enrollment at the college is 16% (JCC, 2022). The college has a 9% population of African American students, and 68% of students are White (AACC, 2022). 63% of the students are under 24 (JCC, 2022).

Capital Community College is an urban, multi-campus, public community college. Capital College is Michigan's third-largest community college, serving approximately 23,000 students annually (LCC, 2022) with 36% full-time and 63% part-time students (AACC, 2022). The institution's student characteristics consist of 46% male and 54% female, with a total minority population of 21%; 9% African American, 8% Hispanic/Latino, 3% Asian/Pacific, and Native American at 1% (AACC, 2022). 69% of the student population is White (AACC, 2022).

Procedures and Data Collection

The researcher completed the Institutional Review Board (IRB) application process with Kansas State University (KSU) to seek approval to obtain secondary de-identified student unit-level data from the three Midwest colleges selected in this study. Upon receiving KSU approval to conduct this study, the researcher contacted these colleges to request secondary de-identified student unit-level data. The researcher then followed the selected college's IRB process. The requested student unit-level data for these three cohorts (fall 2017, 2018, and 2019) consisted of; (a) fall and spring terms in academic years consisting of 2017-18, 2018-19, and 2019-20, (b) four KPIs: 1) earning six or more college credits in the first term, 2) completion of gateway math and English in the first year, 3) persistence from fall to spring, 4) and college-level course completion rates in student's first academic year), and lastly, (c) race.

This study's dependent variables (DV) were success rates = earning six or more college credits in the first term, completing gateway math and English in the first year, persistence from

fall to spring, and college-level course completion rates in students' first academic year. The independent variable (IV) was race = African Americans and Whites.

The researcher provided descriptive statistics for the sample population to determine how many students by race reached each success metric. The independent variable, race, was assigned a value between 1-2 where 1 = African Americans and 2 = White. The dependent variable, success rates, was given a value of Yes = Success and No= No Success. One of the success rates required a numeric value; *college-level course completion rates in a student's first academic year*, which received various values from 0-100%.

Below in Table 3.1. lists the variables, the definition of variables, and the values the researcher requested from the three institutions:

Table 3.1.

Definition of Variables and there Values (Bhopal, 2004; AACCC, 2017)

Variable	Values	Definitions
Race	1=African American, 2=White	Black/African American: “A person with African ancestral origins, who self identifies, or was identified, as Black, African or Afro-Caribbean. The word was capitalized to signify its specific use in this way. In some circumstances, the word Black signifies all Non-White minority populations, and in this use serves political purposes. While this term was widely supported in the late 20th century, there are signs that such support was diminishing” (Bhopal, 2004). White: “An Indo-European. This was Blumenbach’s 18th-century term for the white race of mankind, which he derived from the people who lived in the Caucasus. This term was usually used synonymously with Caucasoid, European, or White. Alone among terms derived from traditional racial classification, Caucasian remains popular in both science and everyday language” (Bhopal, 2004).

6+ college credits	Yes, No	“Number and % of fall cohort students who earned six or more college-level (i.e., non-developmental) credits (with grade A-D or P) in the first term” (AACC, 2017).
Gateway math and English completion	Yes, No	“Number and % of fall cohort students who attempted and passed at least one college-level (i.e., non-developmental) course in Math and English (with grade A-D or P) in the first full academic year. Withdrawals should be counted as attempting but not passing the course” (AACC, 2017).
Persistence	Yes, No	“Persistence KPI for students who Number and % of fall cohort students who enrolled in at least one credit-bearing course (including remedial) in term 2 (spring term)” (AACC, 2017).
College-level course completion rates	Various values from 0-100%	“Number of college-level (i.e., non-remedial) credits earned (with grade A-D or P) by fall cohort students in their first full academic year divided by the total number of college-level credits attempted by these students. Withdrawals should be counted as attempted credits but not credits earned” (AACC, 2017).
Cohort	fall 2017, fall 2018, & fall 2019	Student’s first time enrolled in college for the fall 2017, 2018, and 2019 terms. Which include fall and spring terms in the academic years of 2017-18, 2018-19, & 2019-20.

The institutions then shared this information with the researcher in a password-protected encrypted Excel file. Then the researcher stored the data on the researcher's personal computer to analyze the data. The researcher's computer was stored in a locked file cabinet where the researcher only had access to the key.

Data Analysis

Descriptive statistics were used to describe the characteristics of the sample. To do that, the researcher calculated frequencies and percentages for each variable in the study. To answer research questions 1-3 to determine differences, the researcher used Pearson's Chi-Square statistical test in R statistical programming (Lochmiller & Lester, 2017). The selected test for this study allowed the researcher to determine whether there was a statistically significant difference in success rates between racial groups; African American and White students. A Chi-Square test allowed the researcher to categorically organize each independent variable (race) and dependent variable (success rates). Then to answer research question 4, a Welch Two Sample t-test was conducted to determine if there was a significant difference between the average college-level course completion rates for African American and White students. The secondary de-identified student unit-level data was analyzed using R statistical programming for all calculations.

Limitations

There were three limitations in this study. The first one was limited to three Midwest AACC Pathways Project Colleges selected in this study; Country College, Capital Community College, and Community College of East Coast. Thirty colleges were under the direction of the AACC Pathways Project. Still, the researcher only selected these three institutions due to the researcher being able to acquire the needed secondary data to conduct this study. The second limitation was from the Community College of East Coast because the researcher received incomplete data to complete the statistical tests needed to retrieve accurate results. The third limitation was the four KPIs the researcher identified in this study: earning six or more college credits in the first term, completing gateway math and English in the first year, persistence from fall to spring, and college-level course completion rates in students' first academic year. The

AACC Pathways Project only collects data from the four broad KPI categories below. For this study, the researcher selected one representative metric in those four broad KPI categories mentioned previously. Below were the four KPIs that were collected in the AACC Pathways Project:

1) Early momentum KPIs:

- a) Earned 6+ college credits in 1st term
- b) Earned 12+ college credits in 1st term
- c) Earned 15+ college credits in year 1
- d) Earned 24+ college credits in year 1
- e) Earned 30+ college credits in year 1

2) Gateway math and English completion KPIs:

- a) Completed college math in year 1
- b) Completed college English in year 1
- c) Completed both college math and English in year 1

3) Persistence KPIs:

- a) Persisted from term 1 to term 2

4) College course completion KPI:

- a) College-level course completion rate in students' first academic year (AACC, 2017)

Chapter 4 - Findings

This chapter presents the results from the data analyses performed to determine if there was significant differences in success rates between African American and White students at community colleges that embraced guided pathways. Two Midwest AACC Pathways Project Colleges participated in this study: 1) Capital Community College and 2) Country College. Capital Community College is an urban, multi-campus, public community college with 36% full-time and 63% part-time students (AACC, 2022). The institution's student characteristics consisted of 46% male and 54% female, with a total minority population of 21%; 9% African American, 8% Hispanic/Latino, 3% Asian/Pacific, and Native American at 1% (AACC, 2022). 69% of the student population is White (AACC, 2022).

Country College is a public college in a scenic rural area in Michigan. Over 7,500 students are enrolled at the college, with 41% attending full-time and 59% part-time. 58% of Country College students are female, and 42% are male (JCC, 2022). The minority enrollment at the college is at 16% (JCC, 2022). The college has a 9% population of African American students, and 68% of students are White (AACC, 2022). Sixty-three percent of the students are under 24 (JCC, 2022).

Both colleges were selected because Capital Community College and Country College were two of the thirty colleges affiliated with the AACC Pathways Project. Also, the researcher selected both colleges because the researcher was able to acquire the needed secondary data to conduct this study.

This chapter is organized into three sections; Section I: Descriptive Statistics, Section II: Hypothesis Test Results, and Section III: Summary. The chapter opens with descriptive statistics to describe the characteristics of the sample to determine how many students by race and

academic years from fall 2017 through fall 2019 reached each success metric or KPI. For this study, four KPIs were examined: 1) students earning six or more college credits in the first term, 2) completion of gateway math and English in the first year, 3) persistence from fall to spring, and 4) college-level course completion rates in the student's first academic year. Then the second section of this chapter provides the hypothesis test results. To answer research questions 1-3 to determine differences, the researcher used Pearson's Chi-Square statistical test in R statistical programming to determine whether there was a statistically significant difference in success rates between racial groups; African American and White students. Then to answer research question 4, a Welch Two Sample t-test was conducted to determine if there was a difference between the average college-level course completion rates for African American and White students first academic year, which received various values from 0-100%. Finally, the chapter concludes with a summary of the key findings.

The study sought to answer four research questions with hypotheses: 1) Is there a significant difference in students earning six or more college credits in the first term by race? 2) Is there a significant difference in gateway math and English completion in students' first academic year by race? 3) Is there a significant difference in student persistence from fall to spring by race? 4) Is there a significant difference in college-level course completion rates in students' first academic year by race? To answer these research questions, a quantitative comparative design using secondary data was utilized to examine differences in success rates based on race for academic years from fall 2017 through fall 2019. The research design was based on a non-experimental quantitative design using de-identified, student unit-level data from the two Midwest AACC Pathways Project community colleges.

Descriptive Statistics from Capital Community College and Country College

The following section and tables provide the descriptive statistics for each research question. The characteristics of the sample are presented, and how many students by race and academic year's fall 2017 through fall 2019 reached each success metric or KPI for both Capital Community College and Country College are listed below in Tables 4.1. through 4.3.. Table 4.1. indicates the demographics of African American and White students for both colleges by year. For each fall cohort at Country College, there were almost three times as many White students as African American students compared to Capital Community College there were four times as many White students as African American students. Mostly 80% or more of the population at Capital was White students, and about 70% or more of the student population was White at Country.

Demographics

Table 4.1.

Capital Community College & Country College: Demographics

Capital Cohort	African American N (%)	White N (%)
2017	236 (18%)	1,112 (82%)
2018	176 (14%)	1,043 (86%)
2019	217 (17%)	1,090 (83%)
Country Cohort	African American N (%)	White N (%)
2017	136 (23%)	456 (77%)
2018	121 (23%)	396 (77%)
2019	181 (32%)	388 (68%)

KPI Success Rates

Tables 4.2. and 4.3. illustrate the percentage of students who completed each KPI by race for academic years from fall 2017 through fall 2019 cohorts at both colleges and the mean percentage for college-level course completion rates in the first year. For each KPI, White

students performed better than African American students at both colleges. In Table 4.2., the African American students' performance improved by 12% by the year 2018 at Capital for earning 6+ credits in the first term but decreased by 3% in 2019. For gateway math and English completion for the first year at Capital, African American students' performance improved by 3% in 2019, and persistence from fall to spring for African American students increased by 5% in 2018 and then decreased by 3% in 2019, but the White student's performance for all three metrics at Capital improved over time by 2019 but in 2018 for earning 6+ credits in the first term there was a 1% decrease and 4% decrease in persistence. Even though the White student's performance decreased slightly for 6+ credits in the first term and persistence, White students still performed three to four times better than African American students. Also in Table 4.2. the mean (M) percentage for college-level course completion rates from fall 2017 through fall 2019 cohorts for African American and White students at Capital was: 2017 cohort (M = 60% African American; M = 82% White), 2018 cohort (M = 57% African American; M = 80% White), and 2019 cohort (M = 55% African American; M = 77% White). For both races (African American and White students) at Capital, the college-level course completion rates decreased by 5% for the fall 2019 cohort. For African American students, college-level course completion rates dropped from 60% in 2017 to 55% in 2019. Then for White students, college-level course completion dropped from 82% in 2017 to 77% in 2019.

In Table 4.3., the African American students at Country performance improved over time by the year 2019 by 21 % for earning 6+ credits in the first term, 8% for gateway math and English completion for the first year, and 13% for persistence from fall to spring with a slight decrease from 2018 to 2019 by 3%. The White student's performance continued to improve from 2017 to 2019 for all three metrics; by 6% for earning 6+ credits in the first term, 2% for gateway

math and English completion for the first year with a 1% decrease in 2018, and a 1% increase for persistence from fall to spring. Even though the African American students' performance improved for the first three KPIs, White students still performed two times better than African American students. The mean (M) percentage for college-level course completion rates from fall 2017 through fall 2019 cohorts for African American and White students at Country was: 2017 cohort (M = 52% African American; M = 72% White), 2018 cohort (M = 57% African American; M = 72% White), and 2019 cohort (M = 60% African American; M = 78% White).

Table 4.2.

Capital Community College: KPI Success Rates

Capital Cohort	N	Earned 6+ Credits 1 st Term N (% achieved)	Completed Gateway Math & English 1 st YR N (% achieved)	Persistence N (% achieved)	(Mean %) College-Level Course Completion Rates 1 st YR
2017					
African American	236	72 (31%)	24 (10%)	158 (67%)	60%
White	1112	726 (65%)	287 (26%)	865 (78%)	82%
2018					
African American	176	76 (43%)	20 (11%)	126 (72%)	57%
White	1043	665 (64%)	266 (26%)	771 (74%)	80%
2019					
African American	217	87 (40%)	28 (13%)	149 (69%)	55%
White	1090	709 (65%)	307 (28%)	841 (77%)	77%

Table 4.3.*Country Community College: KPI Success Rates*

Country Cohort	N	Earned 6+ Credits 1st Term N (% achieved)	Completed Gateway Math & English 1st YR N (% achieved)	Persistence N (% achieved)	(Mean %) College-Level Course Completion Rates 1 st YR
2017					
African American	136	62 (46%)	18 (13%)	90 (66%)	52%
White	456	318 (70%)	149 (33%)	346 (76%)	72%
2018					
African American	121	78 (64%)	21 (17%)	99 (82%)	57%
White	396	277 (70%)	126 (32%)	301 (76%)	72%
2019					
African American	181	121 (67%)	38 (21%)	143 (79%)	60%
White	388	295 (76%)	134 (35%)	298 (77%)	78%

Percentage of College-Level Course Completion Rates in the First Year

The percentage of students at Capital Community College and Country College who finished college-level courses in their first academic year (fall 2017 - fall 2019 cohorts) is shown in Tables 4.4. and 4.5., along with the standard deviation, mean, median, and quartiles. In Table 4.4 for Capital Community College, the dataset ranges from 0 being the lowest percentage, to 100% being the highest percentage for college-level course completion rates in the first year. The mean and standard deviation for 2017 were African American M=60%; SD=49%; White M=82%; SD=37%. The mean (M) and standard deviation for 2018 were African American M=57%; SD=49%; White M=80%; SD=39%. Lastly, the mean and standard deviation in 2019 were African American M=55%; SD=48%; White M=77%; SD=41. For all three cohorts, both races were left-skewed, representing that most data points lie at 100%. The data points for the White students' percentages were closer to the mean, and the percentages were not as spread out compared to the African American students for college-level course completion rates in the first year. Also, in Table 4.4, quartiles were displayed for Capital Community College. In 2017 39% of African American students ranked in the less than 25th percentile of their cohort compared to

16% of White students. For White and African American students, a tiny population ranked between the 25-75 percentile for all three cohorts (2017, 2018, and 2019). For both races for each cohort, most students ranked in the 75-100 percentile. The median for all three cohorts was 100% for both African American and White students since most of them ranked between the 75-100 percentile benchmark. For both races, the percentage of students decreased within the 75-100 percentile over the three years by 8% for African American students and 5% for White students. Lastly, the number of students completing 0 college-level credits in their first academic year at Capital Community College was the following: in 2017, there were 91 African American students and 179 White students; in 2018, there were 71 African American students and 185 White students; and in 2019 there were 88 African American students and 229 White students.

In Table 4.5. for Country College, the dataset ranges from 0 being the lowest percentage, to 100% being the highest percentage for college-level course completion rates in the first year. The mean (M) and standard deviation for 2017 were African American M=52%; SD=38%; White M=72%; SD=36%. The mean and standard deviation for 2018 were African American M=57%; SD=35%; White M=72%; SD=35%. Lastly, the mean and standard deviation in 2019 were African American M=60%; SD=60%; White M=78%, and SD=31. For all three cohorts, both races were left-skewed, representing that most data points lie at 100%. The data points for the White students' percentages were closer to the mean, and the percentages were not as spread out compared to the African American students for college-level course completion rates in the first year. Also, in Table 4.5., quartiles are displayed for Country College. In 2017 30% of African American students ranked in the less than 25th percentile of their cohort compared to 15% of White students. For White students, there was a small population ranked between the 25-75 percentile for all three cohorts (2017, 2018, and 2019). More students ranked in the 75-100

percentile for both races for each cohort. When comparing the White students to the African American students, there was more of a percentage of White students (63-66.5%) who reached the 75-100 percentile than African American students (35-39%). Lastly, the number of students completing 0 college-level credits in their first academic year at Country College was the following: in 2017, there were 34 African American students and 62 White students; in 2018, there were 22 African American students and 52 White students; and in 2019 there were 22 African American students and 31 White students.

Table 4.4.

Capital Community College: College-Level Course Completion Rates in the First Year

Capital Cohort	N	Mean	SD	Median	0-25% Q	25%-50% Q	50-75% Q	75%-100% Q
2017								
African American	236	60%	49%	100%	39%	0.8%	0.4%	60%
White	1112	82%	37%	100%	16%	1%	2%	80%
2018								
African American	176	57%	49%	100%	40%	2.3%	2.3%	55%
White	1043	80%	39%	100%	18%	1.2%	2.6%	78%
2019								
African American	217	55%	48%	100%	41%	3%	3%	53%
White	1090	77%	41%	100%	21%	1%	3%	75%

Table 4.5.*Country Community College: College-Level Course Completion Rates in the First Year*

Country Cohort	N	Mean	SD	Median	0-25% Q	25-50% Q	50-75% Q	75-100% Q
2017								
African American	136	52%	38%	55%	30%	14%	18%	38%
White	456	72%	36%	91%	15%	8%	14%	63%
2018								
African American	121	57%	35%	60%	20%	20%	25%	35%
White	396	72%	35%	88%	15%	6%	15%	63%
2019								
African American	181	60%	60%	67%	19%	15%	47%	39%
White	388	78%	31%	100%	9%	7%	17%	66.5%

Hypothesis Test from Capital Community College and Country College

The following section and tables offer the hypothesis test for each research question. The hypothesis test for each research question was the following: for research questions 1 – 3, a Pearson’s chi-square statistical analysis test was performed to determine if there was a significant difference between African American and White students for the first three metrics for cohorts fall 2017 through fall 2019 and for research question 4 a Welch two-sample t-test was performed to compare college-level course completion rates in students’ first academic year of African American and White students for cohorts fall 2017 through fall 2019. For this section, the research questions are restated, the definitions of KPIs are listed, and the statistical test results for each question are discussed.

Research Question 1 – Capital Community College and Country College

Is there a significant difference in students earning six or more college credits in the first term by race? The AACC (2017) definition for this KPI was the “number and % of fall cohort students who earned six or more college-level (i.e., non-developmental) credits (with grade A-D or P) in the first term” (pp. 2-5). Tables 4.6. and 4.7. present the summary of success rates of African American and White students for earning six or more credits in the first term at Capital Community College and Country College. A Pearson’s chi-square statistical analysis test was performed to determine if there was a significant difference between African American and White students earning six or more credits in the first term for cohorts 2017 through 2019. In 2017 at Capital, there was a significant difference between the success rates of African American and White students, $\chi^2 (1, N=798) = 96.1, p = <0.001$. In 2018 at Capital, White students significantly outperformed African American students, $\chi^2 (1, N=741) = 25.9, p = <0.001$. In 2019 at Capital, there was a significant difference between the two variables, $\chi^2 (1, N=796) = 46.3, p = <0.001$. These results in Table 4.6. indicate that White students had a higher percentage of earning 6+ college credits in the first term than African American students. In addition, the p -value = <0.001 for each year demonstrates a significant difference between the African American and White students.

Table 4.7. presents the same information for Country College on students earning six or more college credits in the first term. In 2017 at Country, there was a significant difference between the African American and White students earning six or more college credits in the first term, $\chi^2 (1, N=380) = 15.5, p = <0.001$. In 2018 at Country, there was a significant difference between success rates of African American and White students, $\chi^2 (1, N=355) = 1.1, p = 0.305$. In 2019 at Country, White students significantly outperformed African American students, $\chi^2 (1,$

$N=416$) = 4.83, $p = 0.028$. These results in Table 4.7. indicate that White students had a higher percentage of earning 6+ college credits in the first term than African American students. For all three cohorts, there was a significant difference between the two groups since the p -value was < 0.05 .

Table 4.6.

Capital Community College: Success Rates for African American & White Students & Hypothesis Test results for the difference in the success rates of 6+ College Credits earned first term

Variables	African American	White	Chi-Sq	df	p -value
Capital Cohort					
2017	72 (10%)	726 (90%)	96.1	1	<0.001
2018	76 (10%)	665 (90%)	25.9	1	<0.001
2019	87 (11%)	709 (89%)	46.3	1	<0.001

Table 4.7.

Country Community College: Success Rates for African American & White & Hypothesis Test results for the difference in the success rates of 6+ College Credits earned first term

Variables	African American	White	Chi-Sq	df	p -value
Country Cohort					
2017	62 (16%)	318 (84%)	15.5	1	<0.001
2018	78 (22%)	277 (78%)	1.1	1	0.305
2019	121 (29%)	295 (71%)	4.83	1	0.028

Research Question 2 - Capital Community College and Country College

Is there a significant difference in gateway math and English completion in students' first academic year by race? According to AACC (2017), gateway math and English completion were defined as the “number and % of fall cohort students who attempted and passed at least one college-level (i.e., non-developmental) course in math and English (with grade A-D or P) in the first full academic year. Withdrawals were counted as attempting but not passing the course” (pp.

2-5). Tables 4.8. and 4.9. depict success rates for African American and White students in gateway math and English completion in a student's first academic year at Capital Community College and Country College. A Pearson's chi-square statistical analysis was performed to determine if there was a significant difference between success rates of African American and White students completing gateway math and English in their first academic year for cohorts 2017 through 2019. In 2017 at Capital, there was a significant difference between the African American and White students, $\chi^2(1, N=311) = 26.0, p = <0.001$. In 2018 at Capital, white students significantly surpassed African American students, $\chi^2(1, N=286) = 16.0, p = <0.001$. In 2019 at Capital, there was a significant difference between African American and White students, $\chi^2(1, N=389) = 21.3, p = <0.001$. The results in Table 4.8. indicate that African American students had a lower percentage of completing gateway math and English in their first academic year than White students at Capital. In addition, the p-value = <0.001 for each year demonstrates a significant difference between African American and White students.

In Table 4.9., the same information is presented for Country College. In 2017 at Country, White students significantly surpassed African American students, $\chi^2(1, N=167) = 18.6, p = <0.001$. In 2018 at Country, there was a significant difference between African American and White students, $\chi^2(1, N=147) = 8.8, p = 0.003$. In 2019 at Country, White students significantly outperformed African American students, $\chi^2(1, N=172) = 10.10, p = 0.001$. The results in Table 4.9. indicate that overall African American students had a lower percentage of completing gateway math and English in their first academic year than White students at Country, who completed at a higher percentage. In terms of a significant difference between White and African American students, all three cohorts showed there was a significant difference between African

American and White students completing gateway math and English in their first year since the p-value was <0.05.

Table 4.8.

Capital Community College: Success Rates for African American & White Students & Hypothesis Test results for the difference in the success rates of Gateway Math and English Completion

Variables	African American	White	Chi-Sq	df	p-value
Capital Cohort					
2017	24 (8%)	287 (92%)	26.0	1	<0.001
2018	20 (7%)	266 (93%)	16.0	1	<0.001
2019	82 (8%)	307 (92%)	21.3	1	<0.001

Table 4.9.

Country Community College: Success Rates for African American & White Students & Hypothesis Test results for the difference in the success rates of Gateway Math and English Completion

Variables	African American	White	Chi-Sq	df	p-value
Country Cohort					
2017	18 (11%)	149 (89%)	18.6	1	<0.001
2018	21 (14%)	126 (86%)	8.8	1	0.003
2019	38 (22%)	134 (78%)	10.10	1	0.001

Research Question 3 - Capital Community College and Country College

Is there a significant difference in student persistence from fall to spring by race?

Persistence KPIs were defined as the “number and % of fall cohort students who enrolled in at least one credit-bearing course (including remedial) in term 2 (spring term)” (AACC, 2017, pp. 2-5). Tables 4.10. and 4.11. show the success rates for African American and White students at

Capital Community College and Country College for persistence from fall to spring for cohorts from 2017 through 2019. A Pearson's chi-square statistical analysis was performed to determine if there was a significant difference between African American and White students for persistence from fall to spring for cohorts 2017 through 2019. In 2017 at Capital, White students significantly performed better than African American students, $\chi^2 (1, N=1023) = 11.9, p = <0.001$. In 2018 at Capital, there was no significant difference between African American and White students, $\chi^2 (1, N=897) = 0.3, p = 0.578$. In 2019 at Capital, the results were the same, which indicated no significant difference between African American and White students, $\chi^2 (1, N=990) = 6.6, p = 0.010$. The results in Table 4.10. suggest that White students persisted at a higher percentage than African American students. Still, for years 2018 and 2019, the p -value = 0.578 for 2018 and the p -value = 0.010 for 2019, demonstrating no significant difference between African American and White students for those two years. This result means that even though the African American students had a lower percentage of persisting in 2018 and 2019 compared to the White students, both groups performed the same with the number of students from each cohort within this KPI for the years 2018 and 2019.

The same information is presented in Table 4.11. for Country College. In 2017 at Country, White students significantly outperformed African American students, $\chi^2 (1, N=436) = 4.59, p = 0.032$. In 2018 at Country, there was no significant difference between African American and White students, $\chi^2 (1, N=400) = 1.47, p = 0.226$. Also, in 2019 at Country, there was no significant difference between both races, $\chi^2 (1, N=441) = 0.23, p = 0.633$. The results in Table 4.11. at Country indicate that White students persisted at a higher percentage compared to African American students. Still, for years 2018 and 2019, the p -value = 0.226 for 2018 and p -value = 0.633 for 2019 demonstrates no significant difference between the success rates of

African American and White students for those two years. The results mean that even though the African American students had a lower percentage of persisting in 2018 and 2019 compared to the White students, both groups performed the same with the number of students from each cohort within this KPI for the years 2018 and 2019.

Table 4.10.

Capital Community College: Success Rates for African American & White Students & Hypothesis Test results for the difference in the success rates of Persistence from Fall to Spring

Variables	African American	White	Chi-Sq	df	p-value
Capital Cohort					
2017	158 (15%)	865 (85%)	11.9	1	<0.001
2018	126 (14%)	771 (86%)	0.3	1	0.578
2019	149 (15%)	841 (85%)	6.6	1	0.010

Table 4.11.

Country Community College: Success Rates for African American & White Students & Hypothesis Test results for the difference in the success rates of Persistence from Fall to Spring

Variables	African American	White	Chi-Sq	df	p-value
Country Cohort					
2017	90 (21%)	346 (79%)	4.59	1	0.032
2018	99 (25%)	301 (75%)	1.47	1	0.226
2019	143 (32%)	298 (68%)	0.23	1	0.633

Research Question 4 - Capital Community College and Country College

Is there a significant difference in college-level course completion rates in students' first academic year by race? According to AACC (2017), the fourth KPI was defined as the “number of college-level (i.e., non-remedial) credits earned (with grade A-D or P) by fall cohort students in their first full academic year divided by the total number of college-level credits attempted by

these students. Withdrawals are counted as attempted credits but not credits earned” (pp. 2-5). Tables 4.12. and 4.13. illustrate Capital Community College and Country College's t-test analysis year comparison results for college-level course completion rates in students' first academic year for cohorts 2017 through 2019. A Welch two-sample t-test was performed to compare college-level course completion rates in students' first academic year African American and White students for cohorts Fall 2017 through Fall 2019. In Table 4.12. in 2017 at Capital, White students significantly outperformed African American students in college-level course completion rates in their first academic year: African American students ($M = 60\%$, $SD = 49\%$) and White students ($M = 82\%$, $SD = 37\%$); $t(213) = -5.65$, and $p\text{-value} = <0.001$. In 2018 Capital, there was a significant difference in college-level course completion rates in students' first academic year between African American students ($M = 57\%$, $SD = 49\%$) and White students ($M = 80\%$, $SD = 39\%$); $t(199) = -4.149$, and $p\text{-value} = <0.001$. Lastly, in 2019 at Capital, there was a significant difference for the year 2019 in college-level course completion rates in students' first academic year between African American students ($M = 55\%$, $SD = 48\%$) and White students ($M = 77\%$, $SD = 41\%$); $t(331) = -6.04$, and $p\text{-value} = <0.001$.

The same information is presented in Table 4.13. for Country College. In 2017 at Country, there was a significant difference in college-level course completion rates in students' first academic year between African American students ($M = 52\%$, $SD = 38\%$) and White students ($M = 74\%$, $SD = 36\%$); $t(212) = -5.65$, and $p\text{-value} = <0.001$. In 2018 Country there was a significant difference in college-level course completion rates in student's first academic year between African American students ($M = 57\%$, $SD = 35\%$) and White students ($M = 72\%$, $SD = 35\%$); $t(199) = -4.15$, and $p\text{-value} = <0.001$. Lastly, in 2019 at Country, there was a significant difference for the year 2019 in college-level course completion rates in student's first

academic year between African American students (M = 60%, SD = 33%) and White students (M = 78%, SD = 31%); $t(331) = -6.04$, and $p\text{-value} = <0.001$.

Table 4.12.

Capital: College-Level Course Completion Rates in First Year: T-Test Analysis Year Comparison

Capital Cohort	African American Mean	White Mean	t-statistic	df	p-value
2017	60%	82%	-5.65	213	<0.001
2018	57%	80%	-4.149	199	<0.001
2019	55%	77%	-6.04	331	<0.001

Table 4.13.

Country: College-Level Course Completion Rates in First Year: T-Test Analysis Year Comparison

Country Cohort	African American Mean	White Mean	t-statistic	df	p-value
2017	52%	74%	-5.65	212	< 0.001
2018	57%	72%	-4.15	199	< 0.001
2019	60%	78%	-6.04	331	< 0.001

Summary

This quantitative comparative study analyzed if there was a significant difference in success rates between African American and White students at two AACC Midwest Community Colleges; 1) Capital Community College and 2) Country College. Four KPIs were examined in this study. These KPIs were 1) students earning six or more college credits in the first term, 2) completing gateway math and English in the first year, 3) persistence from fall to spring, and 4) college-level course completion rates in the student's first academic year. To determine significant differences in KPIs 1-3 by race, the researcher used Pearson's Chi-Square statistical

test in R statistical programming. To determine significant differences in KPI 4 by race, the researcher used a Welch two-sample t-test.

The hypothesis results revealed there was a significant difference between African American and White students for each KPI except for persistence from fall to spring for cohorts 2018 and 2019 at Capital Community College and Country College. For the following KPIs, each significance level or *p*-value was less than 0.05 for (1) students earning six or more college credits in the first term by race, (2) gateway math and English completion in students' first academic year by race, and (4) college-level course completion rates in students' first academic year by race. These results showed there was a gap in achievement in these KPIs between African American and White students and White students performed statistically significantly better at both colleges within these three KPIs. The results for persistence from fall to spring for cohorts 2018 and 2019 showed the significance level or *p*-value was greater than 0.05, meaning there was no significant difference between African American and White students for these two cohorts. These results mean that even though African American students had a lower percentage of persisting for cohorts 2018 and 2019 compared to the White students, who had a higher percentage of persisting, both groups performed about the same with the number of students from each cohort within this KPI for years 2018 and 2019. Furthermore, at both colleges, the sample population was significantly larger for White students compared to African American students. The total for both colleges for White students was 4,485, and for African American students was 1,067. The findings and their implications are discussed in detail in Chapter 5.

Chapter 5 - Conclusions and Recommendations

Summary of the Study

Overview of the Problem

Community colleges have the potential to provide students across the nation with practical pathways to decent employment opportunities. Unfortunately, many students who enroll in community colleges do not complete a certificate or degree. Specifically, fewer than 40% of community college students earn a certificate or degree within six years of enrollment (Bailey et al., 2015a). Individuals who do not complete a certificate (also called a credential) beyond a high school diploma face dramatically reduced earning potential (Belfield & Bailey, 2015). Guided pathways has been employed in over 300 community colleges in the United States and claims to break down barriers for underrepresented minorities and attempt to improve overall success rates (Bailey, 2018; Jenkins et al., 2019). However, African American students are still falling through the pipeline and not reaching the same academic standards and achievements as their counterparts (Bailey, 2018). Even though guided pathways implemented at most colleges are seeing progress in most students, colleges committed to equity cannot assume these strategies will close gaps in outcomes (Bailey, 2018). These are complex reforms, and there is still much that is unknown about the impacts of the countless changes in organizational practice and culture in the model. The African American and White achievement gap has often been studied, but its relationship to guided pathways has generally not been explored.

Purpose Statement/Research Questions

This study aimed to examine whether there was a significant difference in success rates between African American and White students at community colleges that have embraced guided pathways. Two Midwest AACC Pathways Project Colleges participated in this study.

AACC Pathways Project is a national project dedicated to improving student success rates by assisting colleges in building the capacity to design and implement guided pathways on a large scale (AACC, 2019). The success rates were the four KPIs examined in this study. These KPIs were students 1) earning six or more college credits in the first term, 2) completing gateway math and English in the first year, 3) persistence from fall to spring, and 4) college-level course completion rates in students' first academic year.

This study explored the following research questions with hypotheses: 1) Is there a significant difference in students earning six or more college credits in the first term by race? 2) Is there a significant difference in gateway math and English completion in students' first academic year by race? 3) Is there a significant difference in student persistence from fall to spring by race? 4) Is there a significant difference in college-level course completion rates in students' first academic year by race?

Review of the Methodology/Overview of Sample/Data Collection and Analysis

This quantitative comparative study used secondary data to examine differences in success rates between African American and White students. The research design was based on a non-experimental quantitative design using de-identified student unit-level data from two Midwest AACC Pathways Project community colleges. The population in this study was a first-time college student cohort for those students who were enrolled for the first time in college for the fall 2017, 2018, and 2019 terms at community colleges in the AACC Pathways Project. The sample included students enrolled in two Midwest community colleges affiliated with the AACC Pathways Project. The sample in the study used secondary de-identified student unit-level data on students enrolled in the following two AACC Pathways Project Colleges: Country College and Capital Community College.

This study's dependent variables (DV) were success rates = earning six or more college credits in the first term, completing gateway math and English in the first year, persistence from fall to spring, and college-level course completion rates in students' first academic year. The independent variable (IV) was race = African Americans and Whites. The researcher provided descriptive statistics for the sample population to determine how many students by race reached each success metric. The independent variable, race, was assigned a value between 1 and 2 where 1 = African Americans and 2 = White. The dependent variable, success rates, was given a value of Yes = Success and No= No Success. One of the success rates required a numeric value; college-level course completion rates in a student's first academic year, which received various values from 0-100%.

The researcher completed the Institutional Review Board (IRB) application process with Kansas State University (KSU) which provided approval to obtain secondary de-identified student unit-level data from the three Midwest colleges selected in this study. Upon receiving KSU approval to conduct this study, the researcher contacted these colleges to request secondary de-identified student unit-level data. The researcher then followed the selected college's IRB process.

To answer research questions 1-3 to determine differences, the researcher used Pearson's Chi-Square statistical test in R statistical programming (Lochmiller & Lester, 2017). The selected test for this study allowed the researcher to determine whether there was a statistically significant difference in success rates between racial groups; African American and White students. A Chi-Square test allowed the researcher to categorically organize each independent variable (race) and dependent variable (success rates). Then to answer research question 4, a Welch Two Sample t-test was conducted to determine if there was a significant difference

between the average college-level course completion rates for African American and White students.

Synopsis of Major Findings

One of the significant findings of this study was the statistical test results. White students performed statistically significantly better at both colleges than African American students on all metrics/KPIs except for persistence from fall to spring for academic years 2018 and 2019 at Capital Community College and Country College. Even though the African American students had a lower percentage of persisting in 2018 and 2019 compared to the White students, who had a higher percentage of persisting, both groups performed about the same with the number of students from each cohort within this KPI for years 2018 and 2019. In addition, since the *p*-values for cohorts 2018 and 2019 at both colleges were greater than 0.05, there was no significant difference between the two variables. The results indicated that both groups at both colleges met the persistence metric/KPI for fall 2018 and 2019 cohorts with the number of students from each group for each cohort. Also, at both colleges, the sample population was significantly larger for White students compared to African American students. The total for both colleges for White students was 4,485, and for African American students was 1,067.

Also, it is important to acknowledge in this study that even though White students performed statistically significantly better at both colleges than African American students on all KPIs except for persistence from fall to spring for academic years 2018 and 2019 there was an increase in African American students performance at Country College. In Chapter 4 in Table 4.3. for each KPI success rate, the performance improved for African American students each year. Table 4.3. displayed the KPI success rate results for students at Country College. At Country for 6+ credits earned for cohorts 2017 to 2019 African American student's performance

increased from 46% to 67%. For completion of gateway math and English in the first year, there was an increase from 13% to 21%. In terms of persistence, there was an increase from 66% to 79%. Then college-level course completion rates in the first year increased from 52% to 60%. This study did find gaps in achievement by race but the results also found that African American students' performance did progress each year at Country College.

Lastly, it is important to highlight the fidelity of the implementation of guided pathways at both colleges. Guided pathways was different at each institution because each institution is different and has different needs, demographics, resources, and initiatives. Also, both colleges were unique in terms of location. Country College is in a rural area and Capital College is located in a downtown city in the capital of that state, which is a very political environment. Examining both colleges showed differences in the implementation of guided pathways. The display of information on the websites regarding the implementation of guided pathways was also diverse. Capital had more detailed visible information, reports/updates, and outlined resources provided to students. Some of Capital's resources included but were not limited to accessibility, counseling, tutoring, advising, financial aid, registration, and other resources. Capital's guided pathways project also involved: mapping programs of study, defining default course sequences, prescribing appropriate general education and elective options, establishing career communities (Meta-majors) for survey courses, conducting cohort style orientation sessions, predictable scheduling, contextualized general education, and tracking of student progress to provide timely and meaningful feedback. It appeared that Capital College provided a holistic approach to implementing guided pathways with verbiage being consistent about their guided pathways model and provided more in-depth information. Country College provided

basic guided pathways information that aligned with the generic information outlined on the AACC Pathways Project website.

Findings Related to the Literature

The main problem in this study focused on performance disparities between African American and White students, African American students having a low completion rate in higher education, how low completion rates cost the student and the college, and lastly, there was still limited data on how guided pathways has improved success rates of African American students within the model (AIR et al., 2014; Bailey, 2018; Bailey et al., 2015a; JBHE, 2019; Kulber, 2018; NSC, 2022).

The findings from this study aligned with some of the studies reviewed in the literature. The conclusions of this study indicated there were statistically significant differences between African American and White students within the four KPIs examined in this study at both Midwest AACC Pathway Project Colleges. The results demonstrated there still were performance disparities between African American and White students despite guided pathways being implemented at these community colleges.

According to the National Student Clearinghouse Research Center (2018), gaps in educational attainment between White and minority populations are one of the vital issues community colleges face. These attainment gaps were shown in this study and the literature review related to the Belfield, Jenkins, and Finks (2019) study. The Belfield et al. (2019) study examined success rates between first-time college minority students and White students at three different community college state systems that embraced guided pathways. The Belfield et al. (2019) study found significant gaps in rates among African American and White students across all EMMs (credit momentum, gateway course momentum, and persistence momentum). The

results for EMM attainment rates in the Belfield et al. (2019) study showed that among African American and Hispanic students across the three different community college state systems, only 24% of African American and Hispanic students in one of the three community college state systems completed college-level English in their first academic year. Approximately one-fifth of minority students were “on track,” and only one in 20 was “on pace” (Belfield et al., 2019). The persistence rate in the Belfield et al. (2019) study was about 60%, meaning that two-fifths of African American and Hispanic students stayed only one semester at their community college (Belfield et al., 2019).

Another example of how this study aligned with the literature review was the Attewell and Monaghan (2016) study. In 2016, Attewell and Monaghan conducted a study on credit momentum using a beginning postsecondary student longitudinal study, which followed nationally representative data on student first-year students starting in public two-year colleges and public or private nonprofit four-year colleges from the 2003 – 2004 academic year. The descriptive statistics mean for community college students who attempted credits their first semester showed that African American students who earned 6 credits were at 12.24%, 9 credits at 12.75%, 12 credits at 10.81%, and 15 credits at 8.51%. Compared to White students, they achieved significantly higher attainment of these credits. White students earning six credits were 59.46%, nine credits at 58.17%, 12 credits at 68.85%, and 15 credits at 70.57%. The results from the Attewell and Monaghan (2016) study mirrored some of the descriptive statistics from the researcher's study regarding students earning 6+ credits in their first term. The outcome data in this study regarding students earning 6+ credits in their first term for each cohort and college were: Capital 2017 African American =10%; White 90%; 2018: African American =10%; White 90%, and 2019 African American =11%; White = 89%. Then Country 2017 African American

=16%; White=84%, 2018: African American =22%; White=78%, and 2019 African American =29%; White=71%. Both studies regarding this KPI (students earning 6+ credits in their first term) showed that White students achieved significantly higher than African American students.

Lastly, outside of the studies from the literature review that aligned with this study, the overarching concern after reviewing the literature and comparing this study to the literature was noticing the disconnect between equity and guided pathways. According to the literature, guided pathways has demonstrated that structured, well-defined pathways may improve student outcomes for all students and yield more college graduates in our society (Scott-Clayton, 2011). However, there are still gaps in the research suggesting guided pathways has bridged the achievement gap between African American and White students (Jenkins, 2018). According to Jenkins (2018), evidence on student success rates from early guided pathway implementations showed substantial improvements for students of color. However, because “White students’ achievement has also increased, achievement gaps sometimes persist.” Jenkins stated further that there was still the question of whether or not “guided pathways reforms can be carried out in ways that close gaps in achievement among students by race/ethnicity, income, age, and other factors” (Jenkins, 2018). In 2021, Jenkins, Lahr, and Mazzariello indicated that colleges see improved outcomes with guided pathways. However, there still is an equity gap in the model by race (Jenkins et al., 2021). Institutions must “apply an equity lens to their practices to ensure that all students acquire equal access to and support to complete the high opportunity programs pathways has created” (Jenkins et al., 2021). This statement aligns with the results from this study which continuously showed that while improvements in success rates were present, there were still achievement gaps between African American and White students at both colleges in this study. The guided pathways model and AACC Pathways Project guidelines were to measure

and assess early outcomes and create equity within these outcomes. Still, the literature revealed that the model was equal, but the outcomes were not always equitable by race. According to the literature review for each KPI being measured, equity should be achieved in each outcome (AACC, 2019). Still, most articles published on student outcomes in guided pathways showed outcomes were not equitable in most cases. Most of the time, only overall student success rates were highlighted, and rarely published data disaggregated outcomes by race. In 2019, Jenkins et al. published a report with CCRC entitled *Redesigning Your College Through Guided Pathways Lessons on Managing Whole-College Reform from the AACC Pathways Project*, which highlighted the need to improve equity in outcomes within guided pathways and how challenging this was for colleges. The report indicated that improving equity in outcomes takes a “much larger, better-coordinated effort to change the student experience from entry to completion” and a broader buy-in from faculty and staff (Jenkins et al., 2019). Another factor was minimizing time to completion by removing excess credits, which improves the cost of completion that directly impacts students from low-income homes, meeting students where they are, and breaking down any barriers they face, especially with students of color (Jenkins et al., 2019). Also, in 2021, CCRC published a report on *How to Achieve More Equitable Community College Student Outcomes* and lessons learned from six years of research on guided pathways. Still, the report touched on the continued challenges community colleges face to improve equity in outcomes within guided pathways (Jenkins et al., 2021). The report highlighted that the following were strategies institutions can implement to try and improve equitable outcomes among students: (1) ***Organize all programs by meta-major and backward-map them*** to ensure they prepare students to secure a family-supporting job or transfer to a four-year college with no excess credits in their field of interest. (2) ***Redesign the onboarding experience*** to help all

students explore their interests and options, connect with an academic and career community, and develop an individualized educational plan aligned with their career and transfer goals. (3) ***Ensure that every student is able to take a well-taught course*** on topics that interest them in their first term. (4) ***Reorganize advising to enable case management by field***, monitor progress, and schedule classes using students' individualized educational plans, and lastly, (5) ***Integrate active and experiential learning*** throughout programs, both inside and outside the classroom (Jenkins et al., 2021). Another factor in improving equity within guided pathways was to use data to drive decisions by disaggregating program enrollment by race and other demographics about the student to make informed decisions on what services a student needs based on the student's "race/ethnicity, income, age, and other sociodemographic factors" (Jenkins et al., 2021). Equity means that no matter who the student is, they should be offered the same opportunity to get the support and resources they need to achieve their educational goals, which a part of that includes race (Western Governors University, 2021). There is still an issue with equity being achieved in these KPIs by race, which should be of major concern for educational leaders to fix this ongoing problem.

Conclusions

The following section provides the conclusion on the implications (discipline-specific) for scholars and consequences for the profession, recommendations for further research, and concluding remarks.

Implications for Scholars and Professionals

The findings from this study produced critical empirical implications. First, the study added to scholarly research and literature by filling a gap in research on whether there was a significant difference in success rates between African American and White students at

community colleges that embraced guided pathways. Most of the literature regarding guided pathways has only focused on the overall success of student outcomes within the guided pathways model or how the overall institution was faring by embracing guided pathways. However, few empirical studies focused on the successful outcomes of African American students within the guided pathways model. The research investigating if guided pathways impacted student success outcomes by race was limited. According to Jenkins (2018) and Kubler (2018), more studies are needed to advance the research on guided pathways regarding performance gaps between White and African American students so more institutions can track outcomes by race to improve comprehensive data collection and analysis on this topic.

Secondly, the study also can benefit African American student learners and institutions since there was a significant difference in success rates between African American and White students. This study showed that there was a statistically significant difference between African American and White students at both colleges for KPIs on 1) students earning six or more college credits in the first term, 2) gateway math and English completion in students' first academic year, and 3) college-level course completion rates in students' first academic year.

The literature review in this study also provided some of the main factors for improving success outcomes for African American students, which were institutions providing African American students with a “sense of belonging,” mentorship programs, and robust academic support services (Bailey et al., 2015b; Jaggars and Fletcher, 2014, Hurtado & Carter, 1997 & Pakowski III, 2019, p. 37. According to the research, African American students achieving an adequate sense of belonging can produce positive results when these students can identify with the administration, faculty, and students and participate in campus activities (Hausmann et al., 2007; O’Neal, Jr., 2012, p.46). Regarding mentorship programs, they “improve diversity,

promote academic resources, and address students' unique differences to improve student outcomes" (Wise, 2011, p. 25). Lastly, institutions providing robust academic support services were essential to African American students and all students. Strong support services is a guardrail approach to "help students stay on their path" by offering academic and non-academic support services alongside intrusive advising practices to keep students from veering off track (Bailey et al., 2015a; Jaggars & Fletcher, 2014; Pakowski III, 2019, p. 37). All three of these factors (1. sense of belonging", 2. mentorship programs, and 3. providing strong academic support services) are embedded in the guided pathways model (AACC, 2019), but educators admit there is still challenges with implementing guided pathways to create equity in outcomes by race. During the original implementation of guided pathways, equity concerns were placed in the background, and now educators are putting equity in outcomes at the forefront of guided pathways reforms (Jenkins & Pellegrino, 2019). According to the research, even though these factors were already embedded in the model, various institutions indicated options of interests were limited to ensure all students had access to clearly designed programs of study aligned with their interests and aspirations, which educational leaders are now examining to unpack program enrollments and completion with equity in mind and reevaluating programs so they can also align with underserved students career and academic interests (Jenkins et al., 2021). Educators are now looking at best practices at large-scale institutions that are advanced with the implementation of guided pathways to promote equity in guided pathways by making systemic changes to create a whole college reform by revisiting each pillar of the model which includes student entry, during, and exit experiences (Jenkins et al., 2019). A vital component of these changes included hiring faculty and staff that mirror the students they serve, creating a sense of belonging, and using data to drive decisions (Jenkins et al., 2019). Educators are now

reexamining their resources to meet each student where they start so institutions can try and build support services to reflect each student's need. Institutions can review their guided pathways model, work with large-scale institutions, reexamine and reevaluate their KPIs by race, and review and implement strategies from this study that demonstrated what factors improve success outcomes of African American students to produce results that can inform and improve practice on how to better, serve African American students.

Lastly, the research in this study provided relevant information to practitioners in community colleges. The study provided a basis for further research on guided pathways by examining differences in KPIs based on race. Community Colleges may benefit from this study by reviewing their pathways program and finding strategies from this study that can improve their success outcomes for African American students.

Recommendations for Further Research

This study provided ways this topic can be advanced and how future studies can contribute to this field. A few limitations imposed in this study provide recommendations for further research. The following section provides recommendations for further research.

There were three recommendations in this study. The first was to use a larger, more diverse sample size of AACC Pathways Project Colleges. In this study, the researcher limited the study to three Midwest AACC Pathways Project Colleges. Thirty colleges were under the direction of the AACC Pathways Project. Also, in this study, the third college, Community College of East Coast, provided incomplete data to complete the statistical tests needed to retrieve accurate results, and this college had a larger population that could benefit from the results of this study. Selecting more than three AACC Pathway Project Colleges that are diverse

in location and include a larger population of African American students could yield different findings.

The second recommendation is to examine all KPIs from each category representing each success metric. In this study, only four KPIs were examined and identified in this study which were 1) students earning six or more college credits in the first term, 2) completing gateway math and English in the first year, 3) persistence from fall to spring, and 4) college-level course completion rates in student's first academic year. The ACCC Pathways Project collects data from four broad KPI categories listed below. But for further research, each category that represents each success metric could be examined to highlight the different outcomes between African American and White students in each early momentum KPI for students who earned 12+ college credits in 1st term, earned 15+ college credits in year 1, earned 24+ college credits in year 1, and earned 30+ college credits in year 1. Also, for the completion of gateway math and English, the focus could be on math separately in the first year.

AACC Pathways Project KPIs:

1) Early momentum KPIs:

- a) Earned 6+ college credits in 1st term
- b) Earned 12+ college credits in 1st term
- c) Earned 15+ college credits in year 1
- d) Earned 24+ college credits in year 1
- e) Earned 30+ college credits in year 1

2) Gateway math and English completion KPIs:

- a) Completed college math in year 1
- b) Completed college English in year 1

c) Completed both college math and English in year 1

3) Persistence KPIs:

a) Persisted from term 1 to term 2

4) College course completion KPI:

a) College-level course completion rate in students' first academic year (AACC, 2017)

Lastly, the third recommendation for further research could be selecting a different research design. A qualitative case study design can be considered to explore how guided pathways were implemented and interview students in the program, specifically African American students' experiences. This research method can be used to gather an in-depth practical examination of current events in their actual state and answer the "how" and "why" questions that were difficult to manipulate the behaviors of those involved in the study (Yin, 2002 & 2008). A qualitative method can help institutions to hear what areas of improvement are needed to serve these students better and what strategies may work to improve equity in outcomes by race. Being informed by the students on what may work to improve the outcomes of African American students in the model can gauge if previous factors (a sense of belonging, mentorship programs, and providing strong academic support services) that are embedded in the model were beneficial or need revisiting. After researching guided pathways, no studies focus on the success rates of African American students in guided pathways. A qualitative study would advance the research in this field.

Another study that could benefit further research on guided pathways is a comparative study comparing non-guided pathway colleges versus colleges that have embraced guided pathways. The study would examine success outcomes by race to determine if there were achievement gaps by race at both institutions. Examining outcomes by race and comparing these

different institutions could determine if guided pathways were effective or ineffective. This study could also improve practice on what resources work to close achievement gaps by race.

Finally, an additional study or an extension of this study to examine other demographics besides African American and White students. These demographics could include other races/ethnicities and also include age, gender, employment, socioeconomic status, or students that receive Pell Grant versus Non-Pell Grant. Examining other demographics could help institutions improve services and resources for different groups of students or what factors may impact their success outcomes.

Concluding Remarks

This chapter provided the conclusion on the implications (discipline-specific) for scholars, implications for the profession, and recommendations for further research. The following section provides concluding remarks.

This quantitative comparative study examined whether there was a significant difference in success rates between African American and White students at two Midwest AACC Pathway Project Colleges. The study answered four research questions with hypotheses: 1) Is there a significant difference in students earning six or more college credits in the first term by race? 2) Is there a significant difference in gateway math and English completion in students' first academic year by race? 3) Is there a significant difference in student persistence from fall to spring by race? 4) Is there a significant difference in college-level course completion rates in students' first academic year by race? To answer these research questions, secondary data was utilized to examine differences in success rates for academic years from fall 2017 through fall 2019 by race. The research design was based on a non-experimental quantitative design using de-identified student unit-level data. The research and data in this study provided insight into

community college success outcomes by race within the guided pathways model. The findings from this study concluded that both Capital Community College and Country College for all three cohorts (fall 2017 through fall 2019) White students performed significantly higher in each metric/KPI compared to African American students, except persistence from fall to spring in the fall 2018 and 2019 cohorts. These results point to much-needed reform by improving equity within guided pathways and understanding that one model for student success cannot apply to each student. Each student is unique, learns differently, and comes from a different background. A college's infrastructure should be designed to be diverse and inclusive of each student a college serves. Hopefully, educational leaders can find ways to improve student success outcomes to close the achievement gap that still persists between African American and White students.

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