A Causal-Comparative Study of Two-year to Four-year Bachelor Degree Attainment of Joint Admission Students at a Flagship University

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Abstract

Approximately 80% of students attending community colleges intend to earn a bachelor’s degree; however, only 17% attain the goal (Horn & Skomsvold, 2011). The Complete College America (2011) initiative signaled a paradigm shift from access to higher education to public policy defining success as completion, graduation, and transfer. Despite efforts made, community colleges are falling short of reaching their two-year to four-year college completion goals (Monaghan & Atwell, 2015). Attention to transfer students and their role in the college completion agenda has become a focus of recent research. There is, however, minimal understanding of transfer admission pathways such as Joint Admission programs and their relationship to degree completion.

This non-experimental causal-comparative ex-post facto study investigated the relationship between a Joint Admission Agreement (JAA) program and two-year to four-year degree completion and time to degree completion, and was guided by these research questions:

1. Is there a relationship between JAA student participation and bachelor degree completion?
2. Is there a difference in bachelor degree time-to-completion between JAA and non-JAA transfer students?
3. To what extent and in what manner is variation in bachelor degree completion rates explained by four-year GPA, total number of transfer credits, degree type, Pell and demographics on JAA and non-JAA?

Ex-post facto data of JAA and non-JAA transfers (n = 846) who earned an associate’s degree and transferred to a state flagship institution from 2011 to 2015 were collected and analyzed using SPSS software. A t-test analysis indicated participation in JAA (n = 121) showed a positive, significant relationship to four-year degree completion, \( t = 5.038, p = .001, M = .70 \) compared with non-JAA \( M = .47 \). A t-test analyses showed JAA \( t = 4.28, p = .001, M = 2.12 \) had .33 of a year faster rate of time-to-completion over non-JAA, \( M = 2.45 \). Results of ANOVA analysis showed demographics has no effect on time-to-degree completion.

This study filled a gap in the literature in finding a positive relationship between JAA participation and both four-year degree completion and time to completion. The results may suggest consideration of both system and institutional policy initiatives to promote and encourage JAA participation.
I. INTRODUCTION

In 2008 as the country fell into a recession, two national foundations, Lumina and the Bill and Melinda Gates Foundation, declared ambitious plans to help foster economic recovery by increasing college completion rates (Field, 2015). In his 2009 address to Congress, former President Barack Obama urged the nation “to attain the highest proportion of college graduates in the world by 2020” (Handel, 2013, p. 5). Ranking 12th in the percentage of students with the minimum of an associate’s degree worldwide, Field (2015) reports, “the United States has a lot of catching up to do” (p. 2). The report, *Time is the Enemy*, Complete College America (2011), warns: “Unless we move with urgency, today’s young people will be the first generation in American history to be less educated than their predecessors” (p. 2). *Time is the Enemy* (Complete College America, 2011) stressed the inverse relationship between the time to degree and college success. That is the longer a student takes to complete a college degree; the less likely the student is to graduate.

The National Center for Education Statistics (NCES) (2017) reported a 59 percent six-year graduation rate for first-time, full-time undergraduate students who began at a four-year institution in fall 2009. In contrast, the six-year graduation rate for two-year entrants was 18 percent (NCES, 2017). Operational impediments, such as excess credit, remediation coursework, and challenging transfer admission processes from higher education institutions impact time to degree completion. Lewin (2014) reports “Each year 1.7 million students begin college taking developmental classes and only 1 in 10 remediation students graduate” (p. 1). Wang (2009) found that students earn on average 134 credits when most students need 120 credits to confer a four-year degree. In a study on broken transfer policies, Donhardt (2013) found that 60 percent of students earning baccalaureate degrees change colleges and roughly 50 percent who transfer
lost credits. Additionally, O’Keefe, Laven, and Burgess, (2011) found a significant relationship between excess credits or lack of required credits with students who change majors or switch to different career tracks.

Nationwide, approximately seven million students enroll in over twelve hundred community colleges with hopes of eventually obtaining a bachelor’s degree (Juszkiewicz, 2016). While access to community colleges has grown over the years, outcomes for students, specifically degree completion, have not necessarily improved (Wyner, 2014). Historically, community colleges measure their success at least in part, by the ability to facilitate student transfer to four-year institutions and provide “gateway to baccalaureate” degrees (Cohen, 2012, p.13). Offering community college students access to four-year completion options requires coordination at the state and institutional levels (Bers, 2013). Thomas Bailey, Director of the Community College Research Center, states, “Community colleges must play a disproportionate role in any significant increase in postsecondary attainment” (Bailey, 2012, p. 76). Currently, approximately 80 percent of students attending community college enter with the intention to earn a bachelor’s degree; however, only 33 percent actually transfer and 18 percent attain the goal of four-year degree completion (Jenkins & Fink, 2016; NCES, 2017). Although community colleges are playing a significant role in pathways to four-year degree attainment, statistics indicate community colleges have the capacity for a more significant impact.

Most state policies reacting to the Complete College America (2011) agenda attempt to accomplish three outcomes; clear academic pathways, transferable articulations, and some guaranteed admission to a four-year institution (Jenkins, Lahr, & Fink, 2017; Jenkins & Fink, 2016). Many states implement articulation policies as a means to map out course equivalencies from one institution to another and minimize non-transferable credit (Jenkins & Fink, 2016).
Research on the effectiveness of Articulation Agreements, hereafter referred to as ArA’s, and four-year degree completion is conflicting (Jenkins & Fink, 2015; O’Meara, Hall, & Carmichael, 2007; Montague, 2012). For example, Ignash and Townsend (2000) found ArA’s increased persistence to degree attainment, whereas, Roks and Keith (2008) determined ArA’s did not enhance bachelor’s degree completion. While research on the usefulness of ArA’s is mixed, little research is known regarding specific pathway programs that guarantee admission to four-year institutions, such as Joint Admission Agreements (hereafter JAA). In particular, there is minimal research on how joint admission influences student persistence to attain a bachelor’s degree.

**Statement of the Problem**

In research on partnerships between community colleges and four-year institutions, Handel (2013) concludes: “community colleges must play a significant role in the college completion agenda” (p. 7). The literature suggests students face many barriers in the two-year to four-year transfer process (An, 2015; Gonzalez Canche, 2014; Hills, 1965; Miller, 2013; Wang & Wickersham, 2014). Notably, credit loss is one of the most significant impediments (Johnson, 2011). Monaghan and Attewell (2015) found students who transfer most of their two-year credits were 2.5 times more likely to graduate with a bachelor’s than those who transfer less. If credit loss had not occurred, Monaghan and Attewell (2015) would suggest an increase in bachelor’s degree attainment over four-year native entrants. Kopko and Crosta (2016) indicate a positive relationship between an associate’s degree and four-year degree completion, mirroring Crook, Chellman, and Holod (2012), who found students with associate’s degrees were 6.9 percent more likely to earn a bachelor’s degree. In contrast, Jenkins and Fink (2016) tracked transfer degree completion across forty-four states and found the connection between an earned community
college credential, including certificates, did not correlate to bachelor degree completion in most states.

Articulation Agreements (ArA’s) are the pathways to minimize credits lost (Kopko & Costa, 2016). Given Kopka and Costa (2016) findings, a state system articulation policy should enhance four-year degree completion outcomes. Transfer pathway reform has shown recent positive results for students who enter programs with clear course sequence (Jenkins, Lahr, & Fink, 2017). Monaghan and Attewell (2015) indicate that a state-system admissions process, specifically between two-year and four-year institutions, increases transfer probability. Several states, to strengthen transfer probability, developed formal transfer admission guarantees to provide a student guaranteed admission to four-year institutions if they complete an academic contract at a two-year institution (Handel, 2013). There is minimal research on the effectiveness of guaranteed admission or joint admissions policies between a community college and flagship university and, specifically, the correlation with persistence to four-year degree completion. To provide insight into the gap of the existing literature, this study investigated the relationship between the Joint Admission Agreement program and bachelor’s degree completion of community college students and a flagship university.

Looking through the lens of Joint Admissions Agreement (JAA), this study evaluated the effectiveness of the JAA program and its desired outcome, to increase bachelor’s degree completion. Students admitted to the JAA held dual enrollment status at both the community college and four-year institution. The students received academic advisement through both institutions on an academic plan, maintained a 2.4 or higher cumulative GPA, completed their associate’s degree within five years and received guaranteed admission to the flagship university.
The purpose of this quantitative causal-comparative study was to examine if a relationship existed between a JAA program and four-year degree attainment and time to degree completion. The results from this study may provide insight useful for policy leaders who influence statewide transfer and articulation programs from community colleges to four-year institutions. This study added to the gap in the literature on guarantee and joint admission programs and explored if a positive relationship exists between a system-wide program and persistence to graduation. It also provided guidance for resource allocation.

**Research Questions**

This study investigated the relationship of various independent variables on four-year degree completion and time to degree completion for students who participated in a Joint Admissions Articulation (JAA) program between a community college and flagship university. The following research questions guided this study;

RQ1: Is there a significant relationship between student participation in the JAA program and bachelor degree completion?

RQ2: Is there a significant difference in bachelor degree time to completion between JAA students and non-JAA transfer students?

RQ3: To what extent and in what manner is variation in bachelor degree completion rates explained by four-year cumulative GPA, the total number of transfer credits, degree type, Pell eligibility, and demographics for JAA and non-JAA?

**Definition of Terms**

Articulation Agreements (ArA)  
A formal agreement between education institutions establishing credit to credit transfer.

Joint Admissions Agreement (JAA)  
Conditionally admitted to a four-year institution while still enrolled at the community college. Must enroll in a specific pathway program prior to 30 earned credits.

Transfer Students  
Students who begin their post-secondary education at a community college and transfer to a four-year institution.
Bachelor Time-to-Completion  Time it takes to complete a four-year degree from initial enrollment at entry institution to completion of bachelor’s degree

Bachelor Degree Completion  A conferred four-year baccalaureate degree.

Bachelor Cumulative GPA  Overall weighted grade point average on 4.0 scale at the four-year degree granting institution

Total Number of Transfer Credits  All credits transferred from the community college to the four-year institution.

Non-White  Student participants who self-identified as other than Caucasian

**BACKGROUND OF STUDY**

**Community Colleges and the Transfer Mission**

According to the U.S. Department of Education National Center for Education Statistics (2017), in the past 30 years, the number of students starting at a community college has increased by over 50 percent, representing approximately 40 percent of all undergraduate students in the United States. Furthermore, community college admissions are expected to grow 13 percent by 2020 (Shapiro et al., 2017). There are two driving forces underlying this growth: an increasing population of underserved groups and the rising cost of four-year public institutions (Handel, 2013). Given that community colleges have low tuition fees and an open admissions policy, traditionally most incoming students are low-income, first-generation, and diverse (Jenkins & Fink, 2015). Yet, research shows community college students who differ by socioeconomic status, gender, age, and parent education are less likely to transfer and persist to degree completion (Crisp & Nuñez, 2014; Dowd 2007; Jain, Herrera, Bernal, & Solorzano, 2011). With the current rising cost of education at four-year public institutions and free community college education options in some states, many families are now considering community colleges as good financial choices for the first two years thus shifting the traditional four-year pathway (Gonzalez Canche, 2014).
Monaghan and Attewell (2015) suggest that 80 percent of students entering community college have intentions of completing a four-year degree. In the past five years, the transfer rate of community college students to four-year institutions has been approximately 25 percent with 17 percent of those transfers completing a bachelor’s degree within six years of transferring (Horn & Skomsvold, 2011; Hossler et al., 2012; Shapiro et al., 2017). Although research shows that low percentages of community college students actually attain the goal of a baccalaureate, Monaghan and Attewell (2015) findings indicate the desire to achieve a four-year degree exists for most students entering community college.

Historically, community colleges embrace transfer pathways as part of their mission (Dougherty & Townsend, 2006). Within higher education, community colleges play a crucial role in meeting the nation’s education goals and fulfilling workforce needs.

The need for a better-educated workforce, along with the centrality of community colleges as an avenue of higher education access for millions of students from underserved groups, and the untested potential of the transfer process as an expressway to the bachelor’s degree, make this an especially opportune time to assess the strength and efficiency of the partnership between the community college and the four-year institution. (Handel, 2013 p. 12-13)

Transparency for transfer from community college to a four-year institution is critical for bachelor’s degree completion. The Center for Analysis of Postsecondary Education and Employment found bachelor completion varied by institution type with public four-year institutions showing the greatest attainment to bachelor’s degree completion (Jenkins & Fink, 2016). Xu, Ran, Fink, Jenkins, and Dundar (2017) examined 177 transfer partnerships across the nation. Xu et al. (2017) found selectivity of the four-year institutions and percentage of students receiving Pell Grants at the four-year institutions were the greatest predictors of successful transfer from home institution to receiving institution.

Townsend (2008) identifies two parts to the transfer transition: the process itself, involving course choice at the two-year institution, and the application process to the four-year
institution. Transfer admissions processes vary across institutions and in some cases among institutions in the same state system (Handel, 2013). Monaghan and Attewell (2015) indicate a streamlined admissions processes within the state system, specifically between two-year and four-year institutions, increases transfer probability.

**Articulations: Their Role in Degree Completion**

Since 80 percent of students entering community college have intentions to move on to four-year programs, the clarity in navigating the transfer process is essential (Monaghan & Attewell, 2015; Simone, 2014). Articulation Agreements (ArAs) are the roadmap for community college students to utilize toward degree completion at a four-year institution (Townsend, 2008). Effective ArAs offer seamless transfer from one institution to another while minimizing the number of credits lost in the process (O'Meara et al., 2007; Montague, 2012). Also, Ignash and Townsend (2000) found ArAs increase retention at four-year institutions for transfer students. On the other hand, Roksa and Keith (2008) concluded “articulation policies do not appear to enhance bachelor’s degree attainment” (p. 247) and Anderson, Sun, and Alfonso (2006) found there was little evidence to support transfer agreements leading to a higher probability of transfer for community college students. While research on the effectiveness of ArAs is mixed (Anderson et al., 2006; Gonzalez Canche, 2014; Ignash & Townsend, 2000), specific programs such as Joint Admission Agreements (JAA) have not been explored in depth. Anderson et al. (2006) data were pre-1991, and since this study, states such as Ohio, California, Tennessee, and Rhode Island have implemented pathways built within the ArA’s such as Joint Admission Agreement’s, Dual Admission or Guaranteed Admission (Jenkins & Fink, 2016).

An underlying theme to develop and foster four-year institution partnerships with community colleges emerges throughout the research (Anderson et al., 2006; Handel 2013;
Monaghan & Attewell, 2015; Townsend, 2008). Today, most states have some form of articulation program in place (Ignash & Townsend, 2000). There are many forms of articulations, for instance: (a) two plus two programs, whereby students take two-years of courses at the community college and transfer them to a specific four-year institution; (b) program articulations which align specific major curriculum from two-year institutions to seamlessly transfer to that major at four-year institutions; (c) dual admission agreements which enable a student to simultaneously apply to, and be accepted by, both the community college and transfer institution (Bers, 2013); and (d) any combination of the above (Jenkins & Fink, 2016). Monaghan and Attewell (2015) suggest an increase in specific pathways and system-wide partnerships would increase communication between sending and receiving institutions, as well as facilitate advisement to and from, increasing transparency in the transfer process.

Transfer Students Challenges in Degree Completion

The National Student Clearinghouse Research Center (2012) reported that 45 percent of all bachelor’s degrees earned in the United States are now awarded to students who have transferred from a community college (Hossler et al., 2012). The Center’s report stated among all transfers from the community college to four-year institutions, 60 percent earned a Bachelor’s degree within four-years of transfer, and it increases to 71 percent within the subset of those who had an earned associate’s degree before transfer (Hossler et al., 2012). Melguizo, Kienzl, and Alfonso (2011) concurred with reports that transfers to four-year intuitions were just as likely to complete a bachelor’s degree as similar native students, those who begin their education at the four-year institution. In contrast, The Pell Institute for the Study of Opportunity in Higher Education conducted a mixed methods study at 15 four-year institutions with distinctive transfer pathways (Miller, 2013). Specifically, Miller (2013) looked at outcomes of transfer students as
they relate to graduation rates and GPA in comparison to their native counterparts. Because the study looked only at defined pathways, the researchers thought they would find very little difference in degree completion rates however, findings showed native students graduate at higher rates over their transfer peers. (Miller, 2013). While an examination of research confirms that community college transfer students face many challenges typically associated with socioeconomic status, first-generation, and nontraditional age (Bailey, Jaggars, & Jenkins, 2015; Grites, 2013; Monaghan & Attewell, 2015; Townsend, 2008), Miller (2013) found the greater deterrents of degree completion were lack of engagement, financial aid problems, transfer shock, and integration of the curriculum across institutions. Doyle (2006) examined the relationship between community college transfers and degree completion and found that the transferability of credits was a key correlate to degree attainment. Monaghan and Attewell (2015) found that students who were able to transfer most of their community college credits were 2.5 times more likely to graduate with a bachelor’s degree than those who transfer less than half of their credits. Despite the mixed results of the research above, all prior literature calls for strong articulations between two-year and four-year institutions.

**Joint Admission and Admission Guarantees**

Transferring from a community college to a four-year institution can be confusing, and the bureaucracy surrounding transfer can be a hindrance to many students (Handel, 2013). Monaghan and Attewell (2015) found academic momentum of community and four-year college students only began to significantly differ in the “third and later years when community college students started to fall behind four-year college counterparts in credit accumulation” (p. 85). In response, state policymakers have attempted to impact persistence to bachelor degree completion through programs that allow for community college students to be admitted to a four-year
institution prior to the transition from an associate degree to a bachelor degree (Wang, 2009). These programs known as Guarantee Admission, Joint Admission, Dual Admission, Joint Enrollment, and two-plus-two are essentially grounded on the same principle, to recognize the student as enrolled in both a two-year and four-year institution rather than classify the student as a transfer (Cope, 2012; Morris & Cox, 2016). Research on the success of these programs is minimal.

Summary

The transfer pathway is vital if American higher education institutions hope to meet the college completion agenda. To answer the call for a better-educated workforce and to recognize that community colleges provide central access to education for underserved students, pathways like Joint Admission Agreements (JAA) must be considered. The literature review shows contradicting research on the relationship between articulations and degree completion. More specifically, there is little research exploring JAA’s and the relationship on persistence to the bachelor’s degree. In an effort to look at the gap in the existing literature, this study will explore if there is a relationship of participation in JAA to degree attainment and time-to-degree completion within a small New England state system.

Methodology

This causal-comparative study investigated if bachelor degree completion differs between student participation in the Joint Admissions Agreement (JAA) compared to non-JAA transfers. A post-positivist approach is the philosophical basis for this causal-comparative study (Phillips & Burbules, 2000). The design allowed for the analysis of ex-post facto data to test assumptions about previously gathered variables that related to or explained degree completion of JAA and
non-JAA student who transferred from a community college to a four-year state flagship university.

**Research Design**

To address the research questions, this non-experimental causal-comparative study utilized longitudinal ex-post facto data. The causal-comparative research was non-experimental in which the “investigator compared two or more groups in terms of a cause or independent variable that has already happened” (Creswell, 2014 p.12). This design evolved from an ex-post facto study (Boden, 2002) which was influential in establishing the JAA program. To explore the relationship between JAA and non-JAA transfers, quantitative data were gathered from archival student records extracted from the four-year state institution. Through statistical analysis, this study attempted to determine if there was a relationship between participation in the JAA and persistence to four-year degree completion and time-to-completion.

**Participants**

In this study, the quantitative ex-post facto data were gathered from archival student records provided by the four-year public flagship university, from a small New England state. The study consisted of two sample populations. Sample one was Pre-JAA ($n = 214$) data originated from Boden (2002) before the implementation of the JAA pathway program and served as observational data for this study. Sample one is comprised solely of non-JAA transfer students who completed an associate’s degree from a community college before transfer in the fall of 1996 or fall of 1997, with the intention of completing a four-year degree.

Sample two was ex-post facto data extracted from the state flagship institution’s PeopleSoft student record files. Sample two data ($n = 843$) included all JAA and non-JAA students who transferred with an associate’s degree from a community college to the state
flagship university between fall 2011 and fall 2015. To stay within the scope of this study, sample two data were cleaned to remove any students who transferred from a two-year non-community college or a four-year college. Since nursing transfers from the community college were the only major who completed their four-year degree online at the flagship university and in seven-week intervals, nursing transfers were removed from the data. Since the purpose of this study is to explore the relationship of a Joint Admissions program on degree completion and time-to-degree in a small New England state, a subset of sample two was extracted for supplemental analysis which could influence state policy. Transfer students who took part in the JAA program were identified as \( n = 121 \).

**Instrumentation**

In this study, a causal-comparative non-experimental design provides the scaffolding to investigate if there was a relationship between JAA and non-JAA transfer student participation and degree completion. The Office of Institutional Research at the four-year institution provided the waiver for access to the ex-post facto data. Through a structured query language (SQL) the data were extracted in December 2017 from the student record system and transferred to a master Excel spreadsheet. To ensure integrity, an institutional trustee, whose role requires the collection, creation, maintenance, security, and semester-by-semester updating of all college-related student-level records assisted in the preparation of the data. Other demographics such as gender, age, and ethnicity were included in the data to see if they relate to or explain a relationship to degree completion of JAA and non-JAA transfers.

**Data Collection**

With permission from the Institutional Review Boards (IRB), the institutional research department at the four-year state research university provided a waiver to use ex-post facto data
from their archival student record system. The file included longitudinal data on each transfer student who attended a community college, completed an associate’s degree by August 2014, and transferred to the four-year state research university between fall 2011 and fall 2015. The data were pulled in December 2017 through a structured query language (SQL) and extracted into Microsoft Excel.

Sample one \( (n = 214) \), was archival data from a previous study (Boden, 2002) and used as observational data in this study. Sample two data \( (n = 843) \) included all JAA and non-JAA students who transferred with an associate’s degree from a community college to the state flagship university between fall 2011 and fall 2015. To stay within the scope of this study, sample two data were cleaned to remove any students who transferred from a two-year non-community college or a four-year college. Nursing transfers were removed from the data since they completed their four-year degree online at the flagship university and in seven-week intervals. Sample two was subdivided into two comparison groups: JAA participants \( (n = 121) \) and non-JAA participants \( (n = 722) \). For comparison analysis, non-JAA students who transferred from the small New England state community college were extracted and recognized as \( (n = 675) \).

Participants of this study were restricted to those individuals who had earned an associate’s degree at a state community college prior to their first term at the four-year state flagship institution. Transfer students from institutions other than community colleges were eliminated from this study. Additionally, participants were limited to only those pursuing their first bachelor’s degree. For this study, the following independent variables were collected for analysis; four-year cumulative GPA, time to degree completion, the total number of transfer credits, the total number of credits earned, degree type and Pell eligible, as well as,
demographics such as age, gender, and ethnicity.

**Data Analysis**

To address the three research questions, this study employed quantitative statistics using Statistical Package for Social Science (SPSS). For sample one, a t-test was calculated to explore the relationship of various independent variables on degree completion after transfer. For sample two, the analysis began with a frequency polygon to explore if there was a relationship between JAA participation and bachelor degree completion and JAA on time-to-degree. A t-test attempted to provide statistical analysis to answer the first two research questions. RQ1: Is there a significant relationship between student participation in the JAA program and bachelor degree completion? A t-test between JAA and non-JAA students by degree completion attempted to determine if there is a difference in degree completion of JAA and non-JAA participants. RQ2: Is there a significant difference in bachelor degree time to completion between JAA students and non-JAA transfer students? A t-test between JAA and time to completion and between non-JAA and time to completion explored if there was a significance of JAA participation on time to degree. RQ3: To what extent and in what manner is variation in bachelor degree completion rates explained by four-year cumulative GPA, the total number of transfer credits, degree type, Pell eligibility and demographics on JAA and non-JAA? A one-way Analysis of Variance ANOVAs were conducted to compare the effectiveness of various demographics on time-to-degree completion with JAA status in the model. A stepwise linear regression analysis model investigated the relationship between one continuous dependent variable (time-to-degree completion) and the independent variables four-year cumulative GPA, the total number of transfer credits, JAA status, and Pell eligibility. This analysis attempted to identify if and to what
degree the variable explains time to degree completion. The results from the analysis looked for indicators of strongest contributors to degree completion for JAA versus non-JAA.

**Limitations**

According to McMillan and Wergin (2010) "a limitation of an ex-post facto study is that the intervention has already occurred: it is not directly manipulated or controlled by the researcher" (p.16). Since the study relied on the data provided by the flagship state higher education institution, there were no independent controls. Additionally, the researcher had limited knowledge of how the data were compiled and managed at the institution. It was assumed that the data were imputed properly and gathered consistently throughout the longitudinal time frame. Furthermore, the first data set from Boden (2002) was created prior to this research study. Since there is no known external validity of the data, the researcher acknowledges this study was limited.

Given this is a causal-comparative design; the relationship between two or more variables does not necessarily mean a causal connection between the variables can be established. There could be many reasons outside the scope of this study shaping why multiple variables are related or influence one another (Gay, Mills, & Airasian, 2006). Additionally, this study examined four-year degree completion at one public flagship state research university. It is possible differences between institution types affected the results.

**Delimitations**

The scope of this study is a Joint Admission pathway program in a small New England state system. Findings may not be applicable to generalize to a larger state system with multiple layers of institutions. The scope of this design excluded the impact of course load as it relates to time to completion. The number of courses a student takes within a semester or year may
influence degree completion or persistence. Additionally, this study only looked at transfers who completed an associate’s degree before transfer. Persistence and degree completion outcomes may vary based on transfer population and transfer behavior patterns.

Resulting Actions

This study sought to expand knowledge and add to the literature by exploring if there was a relationship between participation in the JAA program on four-year degree completion and time-to-degree completion. This causal-comparative study identified specific indicators that may or may not have an influence on degree completion at a four-year institution. The results showed increases in bachelor degree completion or time to completion stemming from participation in the JAA, which could be encouraging motivation for future JAA students. Research exploring this relationship provides insight useful for policy leaders who influence statewide transfer and articulation programs from community colleges to four-year institutions. Additionally, it provides guidance for resource allocation and budgetary alignment to answer the call in the national college completion agenda and reiterate shared pathways are the responsibility of both two-year and four-year institutions.

Summary

Community colleges are the postsecondary entry for many students each year in the United States (Wyner, 2014). Increasing effectiveness of transfer pathways is vital if higher education institutions hope to attain national college completion goals (Jenkins, Lahr, & Fink, 2017; Sugar, 2010). After Boden (2002) had shed light on a need for change in the transfer process from a community college to a flagship university, policymakers established the Joint Admissions Articulation (JAA). The intent of the JAA was to facilitate student transition from an associate’s to bachelor’s degree and provide clear pathways that reduced both time-to-degree and
useless credit through articulation agreements. A state system articulation policy should enhance
four-year degree completion outcomes. Research by Jenkins, Lahr, and Fink (2017) found a
strong relationship between states with guided pathway articulations and student persistence to
degree completion in several states. Minimal research indicates how effective state joint
admission policies are on persistence to four-year degree completion. This study will provide
insight into the gap of the existing literature by investigating the relationship between the Joint
Admission Agreement program and bachelor’s degree completion within a small New England
state system.

The remaining contents of this dissertation include Chapters II through V. Chapter II is
an organization of the existing literature relevant to two-year to four-year degree completion and
synthesizes the research to identify the gap this study attempted to fill. Chapter III describes the
methodological design and includes participants, instrumentation, data collection, data analyses,
limitations, and delamination of the study. Chapter IV presents the findings from the data
analyses. Chapter V is the conclusions of the study with implications and recommendations for
future research, practice or policy changes. Next is Chapter II, the Literature Review.
II. LITERATURE REVIEW

Introduction

President Truman’s 1947 “Higher Education for American Democracy” report (1947) resolved that community colleges offer cost-effective alternatives for lower and middle-class students, opening the door for completion of two-year college or university education (Young, 1996). Today national initiatives such as Complete College America, Completion by Design, and Achieving the Dream recognize community colleges as necessary players to increase degree attainment propelled former President Obama’s 2020 completion goal (Kanter, Ochoa, Nassif, & Chong, 2011; Complete College America, 2011). The Complete College America initiative signaled a paradigm shift from a focus on access to higher education to a focus on public policy defining success as completion, graduation, and transfer rates. Currently, community colleges enroll about half of all undergraduates in higher education, accounting for over seven million students annually (Juszkiewicz, 2016). Known for their affordability, locality, and open enrollment, community colleges are often the only choice for first-generation, minority, and lower social-economic student populations (Bailey, 2012). Despite policy and institutional efforts which focus on student success, developmental education, and transfer pathways, community colleges are falling short of reaching their two-year to four-year college completion goals (Monaghan & Attewell, 2015).

A review of prior research on two-year to four-year degree completion shows increased attention on the community college student population through research on transfer and bachelor degree attainment (Bailey, Jaggars & Jenkins, 2015; Gonzoles Canche, 2014; Jenkins & Fink, 2016; Juszkiewicz, 2016; Monaghan & Attewell, 2015). Recently, a growing body of large-scale quantitative and qualitative research from the Community College Research Center at Teachers
College at Columbia University (Jenkins & Fink, 2015, Jenkins Lahr & Fink, 2017; Xu, Ran, Fink, Jenkins, & Dundar, 2017) advanced knowledge on transfer students and transfer pathways. While these studies have added to the literature on challenges transfer students face and barriers to degree completion, few studies explore the relationship between transfer student participation in guaranteed or joint admission programs and four-year bachelor’s degree attainment. To address the gap in the literature, this study focused on a joint admissions program between a community college and a flagship state university. Specifically, the quantitative analysis attempted to determine if there was a relationship between joint admissions transfer and persistence to four-year degree completion.

The following review of literature provides a background for this study as it relates to the historical mission of community colleges, the role of four-year institutions, the emphasis on the Complete College America Agenda and higher education policies impacting transfer. An extensive review focuses on barriers for two-year to four-year students as they impact degree completion and time to degree. Additionally, a background of study explores pathway programs and joint admissions.

**Postsecondary Education Historical Perspective**

To gain a greater understanding of two-year to four-year transfer, an exploration of the historical context for community college and four-year flagship institutions is necessary. A review of the literature will provide an understanding of the differences between community colleges and four-year institutions. Although this study is not grounded in an individual, organizational culture theory, the review of current literature attempts to provide insight on the cultural differences and challenges that exist for students who move between the two academic environments.
Community College Mission and Culture

Community Colleges have various missions (Dougherty & Townsend, 2006) and “a complex network with multiple performance standards” (Wyner, 2014, p. 9). The Higher Education for American Democracy report (1947) specified the expansion of community colleges to provide equal opportunity and access to a diverse population and to expand the offerings of programs. Community colleges were open to the whole community and provided mass-access, offering a wider variety of programs and credentials (Dougherty, 1994). In response to the American Democracy report (1947), by 2010, enrollment at community colleges nationwide increased to 7.2 million (Snyder & Dillow, 2013). The open access provided underserved students including first-generation, students of color, and low-income students the opportunity to enter post-secondary education as a pathway to a baccalaureate degree (Handel, 2013). In doing so, community colleges admitted students who lacked standard college qualifications. The ethos of the community college mission is known as "the open-door college", differentiating from the more selective four-year institutional mission (Cohen, Brawer, & Kisker, 2013).

A review of literature shows that community colleges were successful at expanding college enrollments and providing open access to underserved populations, but had fallen short of degree completion (Bailey, 2012; Dougherty & Townsend, 2006; Handel, 2013; Jenkins & Fink, 2016; Monaghan & Attewell, 2015; Townsend, 2008). Wyner (2014) states, “While access has expanded over the years, outcomes for students have not necessarily improved” (p.1). Socioeconomic status, race, and age are the leading contributors to student success. Carnevale and Strohl (2010) found 58 percent of community college students were in the bottom half of the national socioeconomic scale compared with 34 percent of traditional four-year students. Adding
to these challenges, Ma and Baum, (2016) reported in the College Board Trends, “Consistent with the family income differences, in 2011-12, 36 percent of dependent students in the public two-year sector were first-generation college students, compared to 24 percent of those in the public four-year sector”. In the College Board Trends (2014), 22 percent of all college students were Hispanic with 56 percent of those enrolled in the public two-year sector (Ma & Baum, 2016), followed by 13 percent of all students classified as Black, with 44 percent of those attending a public two-year institution (Ma & Baum, 2016, Table 3). Community college students tend to be older than undergraduates overall (Ma & Baum, 2016). Data from the National Postsecondary Student Aid Study (NPSAS) show “among full-time lower-level undergraduate students in 2011-12, about 10 percent were 25 or older in the public four-year and private nonprofit four-year sectors, compared to 35 percent in the public two-year sector” (Ma & Baum, 2016, p. 8). These statistics indicate real challenges for transfer and completion.

Research shows that community college students who differ by socioeconomic status, gender, age, and parent education are less likely to transfer and persist to degree completion (Crisp & Nuñez, 2014; Dowd 2007; Jain, Herrera, Bernal, & Solorzano, 2011). The social stratification adds fuel to those who criticize the efficacy of community colleges. Calcagno, Bailey, Jenkins, Kienzl, & Leinbach, (2008) research suggests community colleges which educate the poorest and most underrepresented students perform significantly worse than other community colleges with less social-economic stratification. However, most research on community college student success focuses on attributes of the types of students who attend community colleges rather than the quality or effectiveness of the individual community college.

Today, the community college mission is complex, providing two fundamental types of degree programs, transfer education and workforce career preparation (Wyner, 2014).
Additionally, community colleges serve a broader population with workforce training, certifications, and vocational training (Wyner, 2014). Many students attend community colleges to capitalize on vocational or professional certificate programs that allow them to enter into the workforce more quickly (Cohen, Brawer, & Kisker, 2013). Some scholars suggest the shift in mission diverts students away from the transfer pathway (Clark, 1960, Crisp & Nuñez, 2014; Dougherty & Townsend, 2006). Seminal research by Clark (1960) explains the phenomenon as a “cooling-out” process, whereby students decrease their intentions from bachelor's degree aspirations to certificates that lead to immediate job placement. Other scholars argue the nature of community colleges creates a diversion effect (Leigh & Gill, 2003) or an under matching of students (Smith, Pender, Howell, & Hurwitz, 2012) who meet the requirements to attend a four-year institution but instead were steered towards a two-year program. Doyle (2009) counters the diversion effect with the concept of democratization effect stating that some students who are eligible for admission to a four-year institution are strapped with the challenges of higher tuition costs and self-doubt of college readiness to be successful at a four-year institution. Monaghan and Attewell, (2015) cast doubt on both theories of diversion and democratization in a longitudinal study showing that vocational enrollment did not impact student persisting overall.

In the past few years, there has been significant attention placed on the gap between those who attend community colleges with the intention to transfer and those who actually transfer (Bailey, Jaggars, & Jenkins, 2015; Horn & Skomsvold, 2011; Jenkins & Fink, 2016; Jenkins, Lahr, & Fink, 2017; Xu, Ran, Fink, Jenkins, & Dundar, 2017). Some research suggests community colleges offer a “second chance” for those who did poorly in high school or at a four-year institution (Dougherty, Larh, Merest, 2017). In an essence, politically and socially, community colleges are expected "to provide higher education opportunity and social mobility
CAUSAL-COMPARATIVE JAA AND NON-JAA

for less advantaged students in a society with great social class and race inequality, where higher education access and completion are subject to powerful sociopolitical forces mobilized to preserve the inequality” (Dougherty et al., 2017 p. 4-5).

According to the American Association of Community Colleges (2016), nearly half of all undergraduates (46%) attended a community college at some point during their postsecondary educational track (Juszkiewicz, 2016). Many of the students who enroll in community colleges would not meet the admissions requirements for traditional four-year institutions, could not afford four-year tuition, or do not have the required college readiness skills (Doyle, 2009; Monaghan & Attewell, 2015). Many scholars agree that vertical transfer, the transfer from two-year to four-year institutions, is the primary mission of a community college (Bailey, 2012; Cohen, 2012; Handel, 2013; Wyner, 2014). Successful pathways for vertical transfer depend on the relationships and partnerships formed between community colleges and universities (Jenkins & Fink, 2016). Academic experience and previous college background before transfer have been found to be predictive of vertical transfer student’s integration and academic success at four-year institutions (D’Amico, Dika, Elling, Algozzine, & Ginn, 2014). A recent mixed methods study by Jain, Bernal, Lucero, Herrera, and Solorzano (2016) expanded upon D’Amico et al. (2014) research and found elements of established transfers student institutional priorities, outreach and resources, and opportunities for financial and academic support enhanced transfer retention at the receiving institution and increased a transfer receptive culture. Prior research by Jain, Herrera, Bernal, and Solórzano (2011) established a transfer receptive framework. Jain et al. (2011) defined transfer receptive culture as an “institutional commitment by a four-year college or university to provide the support needed for students to transfer successfully, to navigate the community college, take the appropriate coursework, apply, enroll, and successfully earn a
baccalaureate degree in a timely manner” (p. 257). Institutions with intentional receptive cultures are more likely to have a higher retention and degree completion of transfer students than institutions, which lacked a receptive culture as stated in Jain et al. (2011):

Transfer receiving policy can potentially create the impetus for more transfer-student centered practices at four-year institutions through strong collaborations with two-year colleges. The transfer receiving culture elements must permeate through all aspects of the university and must be incorporated in the daily practices of administrators, faculty and staff. Departments—from academic entities, to student support offices—across institutions must develop, revise, and/or maintain a plan that takes into account transfer students’ varied needs and contributions. Learning from the community colleges that the mission of a transfer sending culture is not only the responsibility of the transfer center, the transfer receiving institutions must implement their practices broadly to integrate transfer students into university life. (p. 263)

**Four-Year State Institution Mission and Culture**

In contrast to community colleges, four-year state-funded research universities access is limited through a selective admission policy with a focus on standardized test scores, strength of high school curriculum, and grade point average. Access to four-year institutions is restricted to students who meet academic qualifications and can afford the financial obligations (Bok, 2015). In addition to providing a broad education to undergraduate and graduate students, four-year research institutions “produce new knowledge through both basic and applied scholarship” (Bess & Dee, 2012, p. 20). These institutions’ commitment to research and graduate education is in contrast to community colleges’ mission where undergraduate teaching rather than research is the focus (Wyner, 2014).

To explore four-year institutional culture, there is value in looking at organizational research. Organizational research supports a link between the structure of an organization and performances (Bolman & Deal, 2013). Scott and Davis (2015) suggest a strong link between the environment in which an organization operates, the systems they use to accomplish their mission, and the organizational structure. Bolman and Deal (2013) concur and assert that
performance within an organization is directly related to alignment between people and the organization. Organizations, hence, are entities that are collectives of participants.

Culturally, four-year institutions focus on first-year student retention, a measurement driven by the Federal government IPEDS, which requires institutions to reveal their graduation rates defined as the percentage of full-time, first-time, degree-seeking enrolled students who graduate after 150 percent/six year of the normal time for completion (Handel & Williams, 2012). Hence, graduates only count in college completion numbers if they started at the institution as first-time, first-year students. Tracing the academic journey of transfer student has little or no bearing on four-year institutional financial incentive or national ranking (Morris & Cox, 2016). If the transfer student retention numbers are less valued than native students, there is little incentive for four-year universities to prioritize them in the organizational structure. While many four-year institutions are required to report transfer graduation rates to their state boards, little emphasis is placed on the valued of the data by policymakers (Miller, 2013). As states continue to place emphasis on performance-based funding, tracking student movement across postsecondary institutions may play a greater role in shaping incentives which link campus funding levels to desired student outcomes (Harnisch, 2011).

In contrast to the IPEDS reporting first-time first-year cohort tracking, higher education leadership is beginning to pay more attention to the Student Achievement Measure (SAM), tracking student movement across postsecondary institutions to provide a full understanding of undergraduate student progress and degree completion. According to SAM, “If all institutions in the United States report student outcomes using the Student Achievement Measure, outcomes for nearly 2 million more students would be counted” (Student Achievement Measures, 2013). According to the American Association of State Colleges and Universities (AASCU) website,
SAM is a “voluntary alternative to the federal graduation rate, which is limited to capturing full-time students who graduate from the first institutions in which they enroll” (AASCU, 2018). Currently, only 15 percent of institutions participate in SAM. Despite the movement to count all students, SAMs credibility and participation will remain limited until it has federal or state incentives attached to participation as with the IPEDS. Growth in states using SAM in metrics to align performance based funding may add momentum to SAM participation.

Poch and Walverton (2005) found policymakers created well-intended rules, but often insufficient. The lack of knowledge by lawmakers about higher education has led to the implementation of policies that are not sustainable at the university or system level. For example, in Washington State, the legislature enacted a funding measure that tied the efficiency of community college transfer graduation time to federal funding. Although the policymakers had good intentions, Poch and Walverton (2005) found,

In the end, the most significant issues for institutions trying to meet accountability goals, from an efficiency perspective, may not be whether these students successfully transfer (nearly one third of community college students in Washington do), or even whether they graduate, but whether they are efficient with time, and with credits, in earning their degrees. (p. 247)

Even the federal government discounts transfer students at four-year institutions (Fann, 2013). Hence, transfer students at most major research institutions are not considered a priority. One school of thought stems from reputation. Some four-year institutions make strategic financial investments based on improving rankings in such publications as U.S. News and World Report (Van Der Werf, 2009). Four-year institutions put efforts into "first-time, full-time" high achieving students. In most rankings, transfer students are not counted, which makes these students a low financial return (Van Der Werf, 2009). Yet, four-year institutions supplement financial loss from attrition in enrollment gaps of native student drop outs by admitting transfers who enroll for fewer years and receive minimal institutional aid (Wyner, 2014).
Levin (2012) compared higher education institutional, organizational cultures and suggested a hierarchy within academic institutions exists based on faculty communities. Four-year public state institutions ranked at the top with faculty communities focused on research, publications, and promoting the expansion of knowledge (Levin, 2012).

Teaching at a master’s institution involves not only the intellectual development of students within the context of their academic attributes but also stimulation of knowledge construction and application through social interactions of faculty and students. At a research university, teaching can entail large lectures and the dissemination of information without interpersonal interaction with undergraduates, or it can involve intense side-by-side investigations with one or more graduate students. (Levin, 2012, p. 5)

Tobolowsky and Cox (2012) examined how faculty and staff shaped the transfer students experience and identified how structures, policies, people and practices all contribute to the devaluing of transfer students. Specifically, their findings suggest that faculty and staff “face many obstacles when trying to facilitate the success of their transfer students” (Tobolowsky & Cox, 2012, p. 405). Among those obstacles identified, there was a lack of institutional priority toward transfer student success, validating the research performed by Van Der Werf (2009).

While there is significant research on the transfer process from the community college perspective (Doyle, 2006; Hossler, Shapiro, Dundar, Ziskin, Chen, Zerquera & Torres, 2012; Long & Kurlaender, 2009; Monaghan & Attewell, 2015) relatively little attention has been given to the role of four-year institutions in the process of receiving transfer students. Handel (2011) states, “Four-year colleges and universities represent the pivotal gatekeepers in the transfer pathway, although they have rarely asserted their role in the transfer process” (p. 4). Colleges and universities receiving transfers are the gatekeepers, as they control the policy which decides on how many transfers they will admit per semester, which qualities define who they will accept and which academic programs are open to transfer students. Recent research on policy reform suggests four-year receiving institutions must create a transfer affirming culture that would involve recognizing how many transfers they receive, the importance of transfers to the
university mission, and a measurement of their performance at the university (Handel & Williams, 2012; Wyner, 2014). In response to the Complete College America agenda, Wyner (2014) suggests policy changes at four-year institutions that set transfer admissions targets, provides detail information about course requirements and shows the transparency of financial funding availability. Today, many states such as Massachusetts, Tennessee, and California are redesigning transfer policy and reforms that connect community colleges to four-year public institutions in the transfer pathway (Jenkins, Lahr & Fink, 2017).

**Cultural Differences**

There are many structural and cultural differences between community colleges and a state university. Typically, four-year institutions build an active campus community through residential life and on-campus activities (Pascarella & Terenzini, 2005). In contrast, community college students usually commute to classes and maintain a similar lifestyle upon transfer, thus limiting their opportunity for involvement in the university social life-cycle (Wyner, 2014). Academically, community colleges have a culture of teaching in small classes described as a personalized experience (Wyner, 2014). In contrast, four-year universities are known for their academic rigor, larger class sizes and an expectation of a proactive or academically focused student (Bok, 2015). Research consistently cites classroom expectation and academic culture are dissimilar at four-year research institutions as compared to community colleges (LaSota & Zumeta, 2016; Monaghan & Attewell, 2015; Wang, 2009).

Within the culture, there are demographic differences between community colleges and four-year institutions. Community college students tend to be older than undergraduates overall. According to the National Postsecondary Student Aid Study (NPSAS), 44 percent of students in the public nonprofit two-year sector were over the age of 25 in comparison to 10 percent in the
public nonprofit four-year sector (NPSAS, 2012). More profoundly, while 80 percent of public nonprofit four-year students started their postsecondary education under the age of 20, only 58 percent of the two-year public sector were this young when they enrolled. Additionally, 20 percent began after they turned 25 (NPSAS, 2012).

Despite the cultural and structural differences, research suggests a holistic view of transfer can be established by developing a transfer sending culture at the community college and a transfer-receiving culture at the four-year institution (Herrera & Jain, 2013). Jain et al. (2011) identify five transfer elements that create the pre-transfer and post-transfer experience. The first two elements focus on pre-transfer; 1.) establish transfer as a high institutional priority and 2.) provide outreach and resources that focus on the needs of transfer students (Jain et al., 2011). The latter parts concentrate on post-transfer, that is the transfer-receptive culture of the receiving institution. This includes 1.) offer financial and academic support, 2.) acknowledge the lived experience of transfer students and how they may differ from traditional native students, and 3.) create a framework to assess and evaluate the transfer process (Jain et al., 2011). Research by Herrera & Jain (2013) and Jain et al. (2011) plays a significant role in the recent development of transfer pathways which are being implemented nationwide with hope to closing the college completion gap between two-year and four-year students (Jenkins & Fink, 2016).

With a resurgence of a higher education accountability movement called performance-based funding, transfer from two-year to four-year institutions may play a role in shaping incentives which link campus funding levels to desired student outcomes (Harnisch, 2011). In a mixed method evaluation by Research for Action, Callahan, Meehan, and Shaw (2017) analyzed three states performance-based funding formulas for two-year and four-year public institutions. The quantitative data drew from both federal and state databases, and the qualitative data
included case studies on the implementation of the policies at the community college and four-year institutions. Although state findings were mixed, overall findings showed that such policies had a positive effect on long-term outcomes for full-time students, however, performance-based funding effects were weaker or negative for part-time students and underrepresented students (Callahan et al., 2017). In contrast, Dougherty et al. (2014) explained multivariate statistical studies have failed to consistently find states with performance funding enjoy significant improvements in student’s outcomes. Despite the differences, research has been consistent that both the community colleges and four-year institutions changed policy to increase transfer rates and transfer completion rates (Callahan et al., 2017; Dougherty et al., 2017). Performances based funding is now in place in over 36 states across the country. By tying the financial incentive to progress and completion, institutions will be forced to change institutional culture specifically regarding transfer students (Dougherty et al., 2017)

**Governance of Transfer Policy Impacting State Systems**

This study explored the relationship of a Joint Admissions Agreement between a community college and flagship state university in a small New England state. The governance and coordination of state transfer policies play a significant role in regulating transfer, articulation, and the effectiveness of the transfer policies. Kintzer and Wattenbarger (1985) and Ignash and Townsend (2000) provide the seminal research on state-regulated transfer policies and articulation agreements. The Education Commission of the States (ECS), (2014), reported 36 states have a transfer common core policy, 16 states have universal course numbering, and 36 states have pathway programs of associate’s degree to four-year institutions. The ECS (2014) report shed light on the lack of consistency in how governing systems implement state transfer policies.
Articulation Agreements: Their Role in Degree Completion

Since 80 percent of students entering community college have intentions to move on to four-year programs, clarity in navigating the transfer process is essential (Monaghan & Attewell, 2015; Simone, 2014). Articulation Agreements (ArAs) are the roadmap for community college students to utilize toward degree completion at a four-year institution (Townsend, 2008). Roksa (2009) defined articulation as "the entire range of processes and relationships involved in the systematic movement of students inter-institutionally throughout postsecondary education” (p. 247). Effective ArAs offer seamless transfer from one institution to another while minimizing the number of credits lost in the process (O’Meara, Hall & Carmichael, 2007; Montague, 2012).

Early on, Kintzer and Wattenbarger (1985) found that ArAs focused primarily on the transfer of general education requirements. To explore ArA policy, Ignash and Townsend (2000) seminal research analyzed 34 states with articulation agreements and found most ArA’s covered only two-year to four-year transfer within the public sector. Furthermore, all ArA’s facilitated Associates of Science or Associates of Arts degrees and not applied degrees, and most still only supported transfer of general education courses leaving out major pathways (Ignash & Townsend, 2000). Montague (2012) found that ArA’s differed across states and institutions between formal or informal agreements, with a primary focus on core curriculum and goal of “curriculum alignment, specifically the alignment of two-year program curricula to their four-year counterparts” (p.283).

Because ArA’s are an agreement negotiated between two or more institutions, they can be bound in political and resource challenges (Bers, 2013).
Many ArA’s within the public sector are state-mandated with Florida being the pioneer in 1971 (Anderson, Sun & Alfonso, 2006). By 2005, twelve states had adopted mandated ArA’s (Anderson et al., 2006) and dedicated resources and manpower to ensure the programs were operational and successful at both the community college and four-year institutions (Bers, 2013). According to the National Center for Public Policy and Higher Education (2011), state articulation policies are evolving. Many states offer transfer associate’s degrees including standard general education curricula like North Carolina and Ohio. These agreements allow transfer students to progress towards a four-year degree with no additional general education requirements (National Center for Public Policy and Higher Education, 2011). To increase four-year degree completion, both Massachusetts and California passed legislation to streamline and automate transfer among the state’s community colleges and universities including guaranteed junior status to those transferring between the community college and the state college system (National Center for Public Policy and Higher Education, 2011). More recently, state systems like Texas and Florida have developed transfer policies that apply to all public institutions in the system with a focus on common course numbering and guided pathways (Jenkins & Fink, 2015).

There is little evidence that ArAs increase four-year degree completion of transfer students (Anderson et al., 2006; Hodara, Martinez-Wenzl, Stevens, & Mazzeo, 2017; Roksa & Keith, 2008). Ignash and Townsend (2000) showed ArAs increased admission and retention of transfer students at four-year institutions, but not necessarily bachelor’s degree completion. Roksa and Keith (2008), through an analysis of post-secondary transcript data of the National Education Longitudinal Study, concluded “articulation policies do not appear to enhance bachelor’s degree attainment” (p.247). This study concurred with Anderson et al. (2006) which found there was little evidence to support transfer agreements leading to a higher probability of
vertical transfer for community college students to four-year state institutions. Anderson et al. (2006) study concluded,

> after holding constant the students’ demographic, educational, socioeconomic status, and enrollment characteristics, they [community college students] have, statistically speaking, the same probability of transferring from a community college to any four-year college or university as a student who enrolls in a state without such an articulation agreement. (p. 276)

Two possible reasons for the mixed outcomes emerge from the research. Several studies suggest that few students take advantage of the ArAs (Hodara & Rodriquez, 2013; Jenkins & Fink, 2015; Roksa & Keith, 2008). Secondly, while the ArAs outline course transferability, they may not always align with the transfer student four-year degree program specifically if they started in a vocational or technical program (Bailey, Jaggars, & Jenkins, 2015). A qualitative case study analysis by Kisker (2007) found several themes emerged in creating and sustaining a two-year to four-year articulation partnership, including the significance of presidential support, financial funding, and status of the previous relationship between the institutions. While past research on the effectiveness of ArAs is mixed (Anderson et al., 2006; Gonzalez Canche, 2014; Ignash & Townsend, 2000), research from Jenkins and Fink (2016) showed when articulations are mapped to guided academic pathways there is a positive relationship to four-year degree completion. Recent research from Xu et al., (2017) explored descriptive patterns of 1,458 transfer partnership for \( n = 128,058 \) student. Students who participated in public four-year partnership averaged a 56 percent bachelor completion rate \( (SD = 17\%) \) and partnerships with highly selective public institutions averages a 70 percent bachelor completion rate \( (SD = 18\%) \).

Based on current research and reports, (Bailey, Jaggars, & Jenkins, 2015; Baker, 2016; Center for Community College Student Engagement, 2016; Fink, Jenkins, Kopko & Ran, 2018; Jenkins & Fink, 2016; Xu et al., 2017) states have shifted policy to statewide transfer guides, which describe both articulations, guided pathways and dual enrollment (Wyner, 2014, p. 4).
Transfer Program Agreements

There are many forms of program agreements between two-year and four-year institutions. Program articulations can be designed in several ways with the same goal to align the curriculum of the first two years of coursework at the community college to the following years at the transfer four-year institution (Bers, 2013). To move beyond articulation agreements, many states have developed formal agreements offering transfers clearer pathways. There are many forms of articulations, for instance: (a) two plus two programs, whereby students take two-years of courses at the community college and transfer them to a specific four-year institution; (b) program articulations which align specific major curriculum from two-year institutions to seamlessly transfer to that major at four-year institutions, such as a two plus three program in science or engineering programs; (c) dual admission agreements which enables a student to simultaneously apply to, and be accepted by, both the community college and transfer institution (Bers, 2013) and (d) any combination of the above (Jenkins & Fink, 2016). These programs typically require students to sign on early in their community college career and may include benefits such as "waiver of application fees, evaluation of credits for transfer every semester, academic advising, use of the university library, and participation in on-campus programs at the four-year institution" (Bers, 2013, p. 19).

Garcia Falconetti (2009) examined Florida's two plus two program by comparing degree completion and persistence of 1,738 community college graduate transfers and 874 native juniors at three Florida universities. Transfer students graduated with fewer lower-level courses and fewer cumulative credits than native student's juniors. Hence the two plus two program had a positive impact on credit creep (Garcia Falconetti, 2009). Additionally, Garcia Falconetti (2009) found discriminant analysis did not yield appreciable differences in the cumulative GPAs
(structure coefficient = -.138) between transfer and native graduates, suggesting that community college transfer students were academically competitive.

Dual or joint admission agreements "enable students to apply to and be accepted by both the community college and the transfer institution at the same time" (Bers, 2013, p. 19). The policy of dual admission typically requires students to meet several requisites such as cumulative GPA minimum, time to degree constraint and guaranteed admissions to an institution but not necessarily a specific program (Bers, 2013). Students typically sign an academic contract that specifies the transfer requirement and mandates the student to participate in advising conversations with both the community college and four-year institution (Handel, 2011). “Dual enrolled programs are likely to work best when the community college and the four-year institution are within close proximity, facilitating cross-enrollment and joint use of resources” (Morris & Cox, 2016, p. 76).

**State Policy Impacting Two-year to Four-year Transfer**

There is minimal research on the effectiveness of state transfer policies and community college transfer for state university degree completion. The two-year to four-year transfer function is an important state policy issue because its outcome “is critical to many factors of state higher education performance, including access, equity, affordability, cost-effectiveness, degree productivity, and quality” (Wellman, 2002, p.4). The National Center for Public Policy and Higher Education (2000) wrote a report *Measuring Up 2000*, a state by state report card for higher education. Wellman (2002) studied the top six states that ranked highest on retention and degree completion and found state policy significantly impacted the effectiveness of statewide two-year to four-year performance. Wellman (2002) found states which had a comprehensive, integrated approach to transfer policy and articulation, had higher degree attainment and
retention than those who did not. More importantly, Wellman (2002) found a focus on academic policy alone was insufficient, as states were only impactful when they combined academic policy reform with accountability and funding. In response to the Measuring Up 2000 report, The Education Commission of the States conducted a survey to identify various ways states define policies for two-year to four-year transfer (Education Commission of the States, 2014). Findings showed 30 states had legislation regarding some type of transfer, with 26 states having either an informal or formal articulation guide (Education Commission of the States, 2014).

Gross and Goldhaber (2009) examined the Integrated Postsecondary Education Data Systems (IPEDS) and found no significance of articulation transfer policies across demographics on the likelihood of vertical transfer between community colleges and four-year institutions. Gross and Goldhaber (2009) found only Latino students were slightly more likely to transfer in states with articulation agreement policies in comparison to those states that did not support ArA’s. In a more recent study by Crips and Nuñez (2014), a significant transfer gap was found in underrepresented student’s movement between two-year and four-year transfer despite the support of ArAs. WICHE’s report (2016) describes demographic changes for the next 15 years with implications for higher education as the minority high school population moves toward the majority pool for college entry by 2030. (Bransberger & Michelau, 2017). According to the report, higher education institutions must prepare to support racial and ethnic diversity to ensure successful student outcomes (Bransberger & Michelau, 2017). Based on Crips and Nuñez (2014) results on transfer gaps for underrepresented students, community colleges and four-year institutions need to adjust, rethink, and design programs that will enhance student success for diverse populations.
Recent studies have shown transfer guides established through state policy are a significant predictor of vertical transfer from two-year to four-year institutions (Jenkins & Fink, 2016; LaSota & Zumeta, 2016). However, growth is minimal. Hodara and Rodriguez (2013) found that in two state systems, only a small portion of students who transferred from the community college completed the common core. In a nationwide look at transfer pathways, Jenkins and Fink (2016) found only 29 percent of transfer student's earned a certificate or an associate degree prior to transferring. Perhaps more troubling, is the supporting research showing that a common core policy combined with an earned associate’s degree do not guarantee all credits will apply to a four-year degree program (Bailey, Jaggars & Jenkins, 2015).

Beyond these studies, several states have commissioned evaluations of policies, including California, Tennessee, Ohio, and Massachusetts. Baker (2016), used department level data to study California community college student’s participation in the Associate Degree for Transfer (ADT) program. ADTs were designed to increase transfer from the community college to the four-year institutions by providing a structured curriculum that allowed transfer with in a state system to be more efficient, however, Baker (2016) found while associate degree attainment increased in departments that offered admission pathways to the four-year institutions ($r^2 = 0.93, p = < .005$), vertical transfer and four-year degree completion at the four-year institutions did not increase. In contrast to California, the Tennessee Higher Education Commission (2012) determined the general education cluster at the community college increased the probability of transfer and persistence to four-year degree completion by 25 percentage points ($Pr (i) = 2.01$). Many state systems have begun to implement new major-specific guided pathways that include statewide agreements for lower core courses (Bailey, Jaggars & Jenkins, 2015). Recently Hodara, Martinez-Wenzl, Stevens, & Mazzeo (2017) investigated different state
policy approaches to credit mobility. Like Gross and Goldhaber (2009), Hodara et al. (2017) found no significance of transfer policy on vertical transfer and suggested confusion about major and transfer destination may play a more significant role.

The evidence on articulations and state transfer policies are mixed (Anderson et al., 2006; Gonzalez Canche, 2014; Gross & Goldhaber, 2009; Hodara et al. (2017); Ignash & Townsend, 2000; Jenkin & Fink, 2016; LaSota & Zumeta, 2016). In an exploratory study on articulation and state policy agreements, Bers (2013) finds ArA’s are necessary, but not sufficient for creating seamless transfer pathways. Bers (2013) concludes:

What is most evident from this brief overview is the wide variation and complexity in policies and agreements within and across states, systems, and colleges. The intent is admirable: to facilitate transfer, minimize the loss of credits, and help students make wise decisions about course reputations and transfer. The reality is different. (p. 24)

**College Completion Agenda**

For the past fifteen years, there has been an increased academic interest in reform efforts focused on two-year and four-year institutional student outcomes (Wyner, 2014). According to the U.S. Department of Education (2017), in the past 30 years, the number of students starting at a community college has increased by over 50 percent, representing approximately 40 percent of all undergraduate students in the United States. Furthermore, community college admissions are expected to increase 13% by 2020 (Shapiro, Dundar, Wakhungu, Yuan, Nathan & Hwang, 2017). There are two driving forces underlying this growth: an increasing population of underserved groups and the rising cost of four-year public institutions (Handel, 2013). Given that community colleges have low tuition fees and an open admissions policy, traditionally most incoming students are low-income, first-generation, and diverse (Jenkins & Fink, 2015). With the current rising cost of education at four-year public institutions and free community college education options in some states, many families are now considering community colleges as
sound financial choices for the first two years, thus shifting the traditional four-year pathway (Gonzalez Canche, 2014).

Monaghan and Attewell (2015) suggest that 80 percent of students entering community college have intentions of completing a four-year degree. In the past five years, the transfer rate of community college students to four-year institutions has been approximately 25 percent with only 17 percent of those students completing a Bachelor’s degree within six years of transferring (Horn & Skomsvold, 2011; Hossler et al., 2012; Shapiro et al., 2017). Although research shows that low percentages of community college students attain the goal of a bachelor’s degree, Monaghan and Attewell (2015) findings indicate that the desire to achieve a degree exists for most students entering community college.

Within higher education, community colleges play a crucial role in meeting the nation's education goals and fulfilling workforce needs.

The need for a better-educated workforce, along with the centrality of community colleges as an avenue of higher education access for millions of students from underserved groups, and the untested potential of the transfer process as an expressway to the bachelor’s degree, make this an especially opportune time to assess the strength and efficiency of the partnership between the community college and the four-year institution. (Handel, 2013 p. 12-13)

Transparency for transfer from community college to a four-year institution is critical for bachelor’s degree completion. The Center for Analysis of Postsecondary Education and Employment found that bachelor completion varied by institution type with public universities showing the most significant attainment to four-year bachelor’s degree (Jenkins & Fink, 2016). Xu et al. (2017) used an analytic framework to examine transfer patterns nationwide and found institutional characteristics such as rural settings over urban setting of receiving institution impacted successful transfer from home institution. Transparency is not equal to all degree types. In seminal research, Ingush (1997) noted “in most institutions, technical degrees are still not considered “equal: to the academic transfer degree” (p. 8). More recently, Xu et al. (2017) added
to the literature of a vocational penalty. Transfer students who entered the four-year institution with an occupational focus were disadvantaged in successful completion versus transfers who entered with a more academic focus (Xu et al., 2017). Loss of credit or lack of applied credit to transfer programs were among the top reasons for the vocational penalty to degree completion (Xu et al., 2017).

**Time is the Enemy**

In the 2011 report, *Time is the Enemy*; Complete College America (2011) warned, “unless we move with urgency, today's young people will be the first generation in American history to be less educated than their predecessors” (p.2). The warning for transfer students was grounded in the evidence. *Time Is the Enemy* found students receiving associate’s degrees earned on average 89 credits when typically, only 60 credits would transfer to a four-year institution (Complete College America, 2011). The Complete College America report suggests state systems should: (1) uniformly measure progress and success by counting all students; (2) Reduce time to degree; (3) Transform remediation; (4) Restructure programs to fit multiple populations. Three policies directly related to time are suggested: “controlling credit creep, creating clear academic maps, and establishing a statewide transferable general education core” (Complete College America, 2011, p. 2). The report concluded the existence of an inverse relationship (r, P) between the time to degree and college success. That is, the longer a student takes to complete a college degree; the less likely the student is to graduate.

Colleges need to recognize that time is the enemy. With today’s student population, more time and more choice often add up to less success. Being able to engage in an extended period of self-discovery or sample multiple course out of catalogues the size of phone books might work for students who have the luxury of unlimited time and money. But this doesn’t work for the nearly 50 percent of students who work more than 20 hours a week or for the 25 percent of community college students who work more than 35 hours a week. (Complete College America, 2011, p. 14)
In an effort to reduce time to degree, it is suggested that states begin to evaluate policy on credit transfers, remediation, academic programs and the overall transfer process.

**Credit Creep**

There are several issues relating to time to degree. Most students need 120 credits to graduate, yet, students earn an average of 134 credits (Wang, 2009). In a nationwide study looking at clearing house data, Donhardt (2013) found roughly fifty percent of students lose some credits in the process of transfer between institutions. The credit loss increases as students are likely to accumulate excess credits when they change majors or pursue electives unrelated to their programs. Students may also find themselves lacking required credits when they switch to distinctively different career tracks (O’Keefe, Laven, & Burgess, 2011). The bottom line is more credits require more time and more funding, both impediments to college completion.

Limited research explores the relationship of credit creep with earned associate’s degree and four-year degree completion. Kopko & Crosta (2016) showed students who earn an associate’s degree are more likely to transfer to a four-year institution than those who just take credits at a community college. Furthermore, Kopko & Crosta (2016) found positive relationship between earning an Associates of Arts and Associates of Science and the likelihood of bachelor’s degree completion within four-year ($r = 1.92$, $p = < .01$), five-year ($r = 1.64$, $p = < .01$) and six-year ($r = 1.50$, $p = < .01$), however, and Associates of Applied Science had no relationship on degree completion. Doyle (2006) found a relationship between the number of earned credits at a community college and four-year degree completion. One state system conducted a qualitative study involving fifty 90-minute focus groups and found most students felt the completion of an associate’s degree was an important step to achieve both practically and psychologically in order to move on to the four-year degree (Kadlec & Gupta, 2014). One student commented, “an
associate degree gets you in the door… to where you can work up to a bachelor’s degree to get something higher. It’s kind of a ladder. You’re kind of working your way, your steps, up the ladder” (Kadlec & Gupta, 2014, p. 6). More recently, a study examining the relationship of an associate’s degree on four-year degree completion found positive influence on four, five, and six-year degree completion rates for Associates of Arts, however, no relationship for workforce-oriented degrees such as Associate’s in Applied Science was found (Kopko & Crosta, 2016). These studies suggest that depending on the degree, an associate’s degree before transfer may improve degree progress post-transfer.

**Remediation**

Among the most problematic impediments to credit creep is remedial education, in reading, writing, and mathematics. According to the National Center for Education Statistics, 32.8 percent of students enroll in remedial courses within their first two years of post-secondary education (NCES, 2017). Lewin (2014) reports that “Each year 1.7 million students begin college taking developmental classes and only 1 in 10 remediation students graduate” (p. 1). Bettinger, Boatman, and Long (2013) analyzed remediation across all types of institutions and found 80 percent of higher education institutions, with an even higher percentage of community colleges, restrict students from enrolling in college-level coursework until developmental requirements are met. Hence, enrollment in developmental coursework prolongs time to degree, since many of these courses are non-credit bearing towards completion of an associate’s or bachelor’s degree (Wyner, 2014).

Specifically, mathematics creates the most significant roadblock towards progression in academic programs. In a study on the relationship of remedial mathematics to degree completion, Calcagno, Crosta, Bailey, and Jenkins (2007) found a lower probability of
graduation among students who needed remedial mathematics. Moreover, Time is the Enemy (Complete College America, 2011) explored remediation further and reported 50 percent of students seeking an associate degree required remediation with an overall 9.5 percent associate degree graduation rate. Additionally, cohort data of community college students who entered between 2006 and 2008 indicated 20 percent of students were referred to a three or more sequence of math courses (Bailey, Jeong, & Cho, 2010). In their findings, Bailey et al. (2010) found only 15 percent of students completed their sequence, and only 8 percent completed a college–level mathematics course. These studies suggest that students who fail to meet college readiness are more likely to experience credit creep, impacting time to degree and significantly decreasing the chances of earning either an associate’s or bachelor’s degree.

Given the impact on time to degree, some researchers question the effectiveness of remedial coursework. (Bailey, 2009; Calcagno et al., 2007; Complete College America, 2012; Melguizo, Kienzl, & Alfonso, 2011). Studies consistently find developmental education to have little or no impact on long-term student success and degree completion (Bailey et al., 2010; Bettinger et al., 2013; Calcagno et al., 2007). In response, new approaches such as summer bridge programs, learning communities, co-requisite course offerings and technology tools incorporated into the classroom are beginning to address the gap in developmental education (Bettinger et al., 2013). Specifically, co-requisite course offerings, the concept of students simultaneously taking a developmental and a credit-bearing course in the same subject (Bettinger et al., 2013), is a more recent strategy aimed at getting students up to speed faster, thus cutting time and costs associated with degree completion. Two recent studies show promise that the co-requisite model may be impacting both completion rates and time to degree (Center for Community College Student Engagement, 2016; Wathington, Pretlow, & Barnett, 2016).
Transfer Gap – Pre-Transfer Challenges

Research suggests that underrepresented minority students perceive community college as a pathway to four-year degree attainment (Bailey, Jaggars, & Jenkins, 2015). In a nationally represented study, data showed that approximately 80 percent of students attending community college intend to earn a bachelor's degree, but only 25 percent transfer and 17 percent attain the goal of completing a four-year degree (Horn & Skomsvold, 2011). Adding to the completion challenges, the United States Department of Education report exposed lack of degree completion is related to ethnicity, reporting four-year degree attainment for minority students was below 40 percent in comparison to white students at 49 percent and Asian American students at 61 percent (US Department of Education, 2012). This disparity is referred to as the vertical transfer gap (Crisp & Nuñez, 2014). Wood, Nevarex, and Hilton (2012) found when using a national data set on financial aid; White students were three times more likely to transfer than underrepresented student populations. More recently, Crisp and Nuñez (2014) confirmed race identity impacts the likelihood of transfer. Hence the researchers coined the term "racial transfer gap." Using two national data sets, they found only 32 percent of African American and 13 percent Latino students transferred in comparison to 45 percent White.

Other challenges documented in the literature influence vertical transfer. Several studies showed a positive relationship between students who transfer and parent education levels, shedding light on a transfer disadvantage for first-generation students (Anderson et al., 2006; Monahan & Attewell, 2015; Porchea, Allen, Robbins, & Phelps, 2010). Additionally, findings by Anderson et. al., (2006) suggest financial aid provided by the four-year institution may be positively related to vertical transfer. Furthermore, there is increasing evidence to suggest full-time enrollment increases student’s probability of transfer (Anderson et al., 2006, Dougherty &
Kienzl, 2006; Porchea et al., 2010; Wang, 2012). Timing of transfers can also play a challenge. Many institutions accept mid-year transfers. Peska (2009) surveyed 373 mid-year community college transfer students and found mid-year students were less aware of institutional resources and experienced more difficulty with social adjustment. Several life circumstances have been shown to negatively impact transfer including gender status as female (Porchea et al., 2010) dependency status (Anderson et al., 2006) having a spouse or a child (Wang, 2012) and work commitments (Dougherty & Townsend, 2006; Wang 2012). Crisp and Nuñez (2014) developed a multilevel modeling approach and concluded a combination of factors identified as, environmental pull and precollege elements collectively contributed to the successful transition from two-year to four-year for both Whites and underrepresented students.

More significantly, is the growing body of research that suggests a negative relationship between enrolling in a vocational program and vertical transfer of underrepresented students (Crisp & Nuñez, 2014; Kapok & Crosta, 2016). For minority students, research indicates enrolling in vocational programs may have short-term gains but long-term negative consequences (Brint & Karabel, 1989; Clark, 1960; Crisp & Nuñez, 2014; Jenkins, 2011). In a seminal study on minority transfer gap and career-based programs, Tendon and Garza (1995) noted:

While community colleges have sought to find their niche in postsecondary education by concentration on career-based education to prepare students to enter the job market, many educators are concerned that higher expectation should be set for students of color, particularly since minorities occupy few privileged positions in society in which undergraduate degrees are necessary. (p. 290)

Transfer Students Challenges in Four-year Degree Completion

Historical researchers question the viability of community college student success to four-year degree completion. Berkner, He, and Cataldi (2002) found many students who began at a two-year institution and noted on their admissions they had a long-term goal of seeking
baccalaureate degree, never transferred. Berker et al. (2002) based their study on the 1996 - 2001 Beginning Postsecondary Students Longitudinal Study and found only 23 percent completed an associate’s degree and 13 percent completed a baccalaureate degree. Alfonso et al. (2006) analyzed data \((n = 12,144)\) from the National Education Longitudinal Study (NELS), the United States Department of Labor Statistics and the United States Department of Education and examined the impact of attending a community college on four-year degree attainment.

Community College transfers earned a four-year degree almost 50 percent below native students (Alfonzo et al., 2006). Alfonso et al. (2006) also noted that community college students had lower socioeconomic background, lower test scores and were more likely to stop out. Adding to this research, Long and Kurlaender (2009) looked at 7,388 students who began at a community college and indicated the desire to earn a four-year degree. Only 26 percent of community college transfer students obtained a four-year degree within nine years of starting, and nearly 44 percent had dropped out altogether (Long & Kurlaender, 2009). Wang (2009) utilized the National Education Longitudinal data and Postsecondary Education Transcript to predict factors of persistence among high school graduates of 1992 who attended community college first and transferred to a four-year institution. Results indicated the probability of attaining a four-year degree was significantly associated with gender, socioeconomic status, high school rigor, personal education expectations, community college GPA and math remediation (Wang, 2009).

In contrast, more recent research has shown a positive movement in the viability of community college students and four-year degree attainment. The National Student Clearinghouse Research Center (2012) reported 45 percent of all bachelor's degrees earned in the United States are now awarded to students who have transferred from a community college (Hossler et al., 2012). The Center’s report stated among all transfers from the community college
to four-year institutions, 60 percent earned a bachelor’s degree within four-years of transfer, and it increases to 71 percent within the subset of those who had an earned associate’s degree prior to transfer (Hossler et al., 2012). Melguizo, Kienzl, and Alfonso (2011) concurred with reports that transfer to four-year institutions were just as likely to complete a bachelor’s degree as similar native students, those who begin their education at the four-year institution. In contrast, The Pell Institute for the Study of Opportunity in Higher Education conducted a mixed methods study at 15 four-year institutions (Miller, 2013). Specifically, Miller (2013) looked at outcomes of transfer students as they relate to graduation rates and GPA, in comparison to their native counterparts. Findings showed that native students always graduate at higher rates over their transfer peers. Using National Center for Education Statistics data, Doyle (2006) examined the relationship between community college transfers and degree completion and found “among those who had all of their credits accepted, 82 percent had graduated within six years with a bachelor’s degree. Among those who had only some of their credits accepted, 42 percent had attained a bachelors’ degree” (Doyle, 2006 p. 56). Wang (2009) found the highest correlations to successful degree completion of two-year vertical transfer was their high school academic performance, suggesting that highly motivated students in high school will persist at a higher rate of four-year degree completion regardless of entry institution type of postsecondary education. Variance in the findings of these studies may be attributed to data collection using cohort survival rates, the ratio of number of students retained from one year to the next concurrent year, versus using overall enrollment data. Despite the mixed results of the research above, all prior literature suggests multiple barriers impact vertical transfers as they navigate between two-year and four-year institutions.
Many barriers can be found in the transfer process. Townsend (2008) defines the transfer process as a bridge in the matriculation process for the student between the current institution and the subsequent institution. The following explores the literature on transfer student characteristics, transfer shock, transfer credit evaluation, advising, admissions and financial aid.

**Student Attributes Impacting Likelihood of Transfer:**

It is well established through the literature (Bailey et al. 2015; Handel, 2013; Hossler et al., 2012; Jenkins & Fink 2016) that 80 percent of community college students intend to transfer to a four-year institution, but only 17 percent reach their goal (Shapiro et al., 2017). Research has shown that transfer students’ personal and institutional characteristics influence the likelihood of earning a four-year degree (Calcagno et al., 2008; Fann, 2013; Karp & Bork, 2012). Research by Townsend (1995) and Laanan (1996) went beyond desire to transfer and found student perceptions, social and psychological factors impeded the transfer process. Grounded research by Townsend (1995), and Pascarella & Terenzini (2005) showed that being active on campus through campus life, athletics, part-time on-campus employment or living on campus increased a student’s likelihood to transfer. These findings illustrate the importance of a holistic student life experience and the probability to transfer. In contrast, these findings support students who can participate in these traditional student life activities. Unfortunately, many community college students are commuters, non-traditional age, and have family or work obligations outside of the classroom (Ma & Baum, 2016).

Student academic accomplishments also correlate to the likelihood of transfer. Wood, Nevarez, and Hilton (2012) found high school GPA was a significant determinant in probability to transfer to a four-year institution. Wood et al. (2012) found students with strong high school GPAs were more likely to have academic success at the community college and were more likely
to transfer and complete a four-year degree. Additionally, research consistently showed transfer students with higher cumulative GPA from the community college were more likely to transfer and persist to four-year degree completion (LaSota & Zumeta, 2016; Melguizo et al., 2011; Monaghan & Attewell, 2015; Wang & Wickersham, 2014; Wood et al., 2012). More recently, Kopko & Crosta, (2016) found students who completed an associate degree at a community college were more likely to transfer and to persist to degree completion.

A significant body of research explored the personal characteristics influencing the likelihood of transfer (LaSota & Zumeta, 2016; Monaghan & Attewell, 2015; Stern, 2016; Wang, 2009; Wood et al., 2012). In a recent report, Ma and Baum (2016) shared how higher socioeconomic status is an indicator of likelihood to transfer. Wood et al. (2012) found students who worked less than 20 hours per week and had minimal family obligations were more likely to transfer than those who worked more. LaSota and Zumeta, (2016) looked at the intention for upward transfer at entry to community college and found mindset to transfer was a strong predictor of four-year degree completion. Even location can impact transfer probability. Stern (2016) found students who lived in a rural environment were more likely to persist at community college and transfer versus those who live in an urban environment. Several studies show minority status alone creates challenges for successful transfer outcomes (Calcagno et al., 2008; LaSota & Zumeta, 2016; Monaghan & Attewell; 2015; Stern, 2016; Wood et al., 2012).

The research on student characteristics impacting the likelihood of transfer paints a picture of the social stratification at community colleges today (LaSota & Zumeta, 2016; Monaghan & Attewell, 2015; Stern, 2016; Wang, 2009; Wood et al., 2012). Community college students who have minimal family or financial obligations, are academically stronger and most likely Caucasian. Additionally, they tend to be more successful at transitioning from the
community college to the four-year institution (LaSota & Zumeta, 2016; Monaghan & Attewell, 2015; Stern, 2016; Wang, 2009; Wood et al., 2012). The research suggests however, that despite the identified barriers, students who are more active on their campus and work hard to perform academically can increase their probability of transferring to a four-year institution.

**Transfer Shock Phenomena**

Several studies have documented a phenomena dubbed by Hills (1965) termed “transfer shock”, which is a temporary dip in grade point average (GPA) that is often experienced by two-year transfer students in their first and/or second semester at four-year institutions (An, 2015; Anderson et al., 2006; Gonzalez Canche, 2014; Hills, 1965, Miller, 2013; Monahan & Attewell, 2015; Townsend, 1995; Wang & Wickersham, 2014). Vertical transfers experience cultural differences that are characterized as transfer shock including less student-centered or less personal environment, higher academic rigor, and a lack of a sense-of-belonging to the four-year institution (Jain et al., 2016). Research on transfer shock found students have difficulty navigating the four-year institution, whose mission and culture is much different than their community college (An, 2015). For many students, it can take up to two semesters to understand the four-year institution's environment, policies and academic standards (Anderson et al., 2006). Dougherty (1994) found community college transfers have a higher rate of attrition than their counterparts who entered traditionally at four-year institutions due to the “transfer shock” phenomenon.

Recent research suggests transfer shock seems to be dissipating. Kopko and Costa (2016) and Long and Kurlaender (2009) expressed a consistent trend despite initial challenges, transfer student completion rates at specific institutional types are high, and at best, transfer shock may be a temporary phenomenon. Likewise, Melguizo et al. (2011) found transfer students were just
as likely to complete a bachelor’s degree as similar students who began as traditional four-year entries with intervention from student support services. Adding to this evidence, Monaghan and Attewell (2015) found when observable characteristics of transfer students and native student are controlled, transfer students are just as likely to graduate as their native counterparts. Results are similar when comparing students who transfer to a selective flagship institution regardless of their first entry into higher education (Bowen, Chingos, & McPherson, 2009).

Transfer shock not only applies to a dip in GPA, but is used to describe the transition of socially fitting into the four-year institution. Transfer students are typically less socially engaged with the university than students who entered in as freshman (Ishitami & McKitrick, 2010). In a grounded study, Townsend and Wilson (2006) interviewed 19 community college students who transferred to a state research university and found transfer students needed both academic support and social integration guidance. The researchers speculated, “with the drop in GPA, transfer shock may be partly or almost totally a manifestation of the shock experienced in moving from one institutional culture to another” (Townsend & Wilson, 2006, p. 25). In other words, transfer students may have difficulty integrating into the new college community due to their lack of established connections within the institution.

**Credit Loss – Time, Value, Money**

Students face a number of barriers when transferring from community college to a four-year institution (Townsend, 2008). Notably, credit loss is an even greater barrier to transfer. Even when community college students complete the requirements for transfer, four-year institution policies, such as transparency of articulation agreements and inequitable transfer credit evaluations, or length of time to make informed decision, can prevent the student from successfully transferring credits towards a four-year degree (Anderson et al., 2006; Doyle, 2009;
Monaghan & Attewell, 2015). At many four-year institutions, transfer credit evaluations are approved by the faculty, who are typically off campus from May to September, peak timeframe for transfer (Dowd, 2011).

Transfer students are often frustrated over the communication surrounding course credit transfer (Townsend, 2008). In a survey of 481 transfer students, ease of communication and clarity of course transfer ranked as their top priority. Adding to this research Chrystal, Gansmer-Topf, and Laanan (2013) interviewed 22 transfer students and found the primary concern was, which of their credits would transfer and apply to their program of study. Later, Ellis (2013) analyzed 78 community college transfers and found they had a solid understanding of the articulation process but became frustrated when agreements were not honored. More recently Stern (2016) found students were disappointed that some of their credits either did not transfer or only transferred as electives and in some cases, deferred transfer. In a qualitative study by Public Agenda (2014) one focus group comment stood out, “Only 11 of the 25 courses I took transferred. And of the classes that transferred, not all of them transferred for my degree. I lost so much time and money” (Kadlec & Gupta, 2014, p. 7). Hence, credit loss can be a systemic issue based on institutional structure or a causal issue based on student major transition.

Research shows that credit loss has implications. Doyle (2006) examined data from the 2001 NCES Beginning Postsecondary Students Survey, which followed students for six years, and examined acceptable transferable credits and four–year degree attainment. By analyzing a vertical transfer cohort, Doyle (2006) found 82 percent of students who transferred all of their credits graduated with a four-year degree within six years’, in contrast to 42 percent of those student who lost credits in the transfer process. This research suggests “baccalaureate degree
completion may have more to do with issues outside of the student’s control than their own choice” (Doyle, 2006, p.58).

Monaghan and Attewell (2015) found students who were able to transfer most of their community college credits were 2.5 times more likely to graduate with a bachelor’s degree than those who transfer less than half of their credits. In their study, Monaghan and Attewell (2015) performed an analysis of nationally tracked first-time freshman \(n = 2,010\) in a 2004 cohort from the Beginning Postsecondary Study (BPS). The study tracked students by semester and interviewed students at three points, beginning, third year and sixth year. The findings showed that 25 percent of two-year transferred earned a bachelor’s degree within six years, in contrast to 46 percent of four-year native students. Remedial education played a significant role in time to degree. Monaghan and Attewell (2015) found 51 percent of community college students had a developmental math course as opposed to 23 percent of the four-year native students. Transfer students with 40 to 59 credit hours were 56 percent more likely to transfer from the community college and graduate in six years, hence Monaghan and Attewell (2015) findings suggest if credit loss had not occurred, bachelor’s degree attainment would have been greater among the community college transfers than the traditional four-year entrants (Monaghan & Attewell, 2015). Overall, the transfer credit evaluation was found to have had a substantial relationship on the student’s decision to ultimately attend a four-year institution (Roksa & Keith, 2008).

**Academic Advising**

Another challenge in transfer student success is advisement at both the community college and four-year institution (Bailey, Jaggars, & Jenkins, 2015). Historically, academic advising is grounded in theoretical research (Holland, 1997; Super, 1990). The goal of advising is twofold, first to assist students to explore their talents and interests and explore careers that
match their skills, and second to identify education pathways to attain their career goals (Holland, 1997; Super, 1990). Many scholars have noted that community colleges are organized like cafeterias, offering a wide variety of courses and programs with insufficient structure and advice (Bailey et al., 2015; Dougherty, 1994; Rosenbaum, VonHandorf, Nienaber, & Bevins, 2015). The Reclaiming American Dream Act (2012) found less than one-third of entering community college students were assisted by an academic advisor to plan their educational path. Due to financial constraints, community college academic advisors have large caseloads resulting in rushed or infrequent advising appointments (Jaggars & Fletcher, 2014). Often advisors have little initial knowledge about their students and may only meet with a student once during their academic time frame (Laanan, 1996). In a study focused on community college advisement, Laanan, Starobin, and Eggleston (2010) found a significant negative relationship between incorrect or limited information disseminated by advisors and student’s likelihood to transfer. Adding to this body of research, Gard, Paton, and Gosselin (2012) found poor transfer advisement at the community college level was a primary impediment to successful transfer to a four-year institution. Bailey et al. (2015) argued the community colleges offer disconnected courses creating a self-service model, which enables students to make poor choices, thus hindering degree completion.

More recently, Jaggars and Fletcher (2014) case study on advising at a Detroit community college found students who were clear on a program of study were fairly content with advising, in contrast to undecided students who felt the advising was inadequate and rushed. Jaggars and Fletcher (2014) had three key findings:

First, students and advisors were both uncertain about students’ abilities to accurately self-advise. Second, some of that uncertainty was due to poorly organized, inconsistent, and difficult-to-apply information provided by the college, and some of it was due to students’ own lack of decidedness. Third, students valued both face-to-face and online information resources but felt that both needed improvement. (p. 9-10)
In the study it was clear students were frustrated when mistakes were made, as one student states,

When the counselor screwed up my schedule and stuff, they literally screwed it up to the point where I’m going to have to skip a whole semester before I can get accepted into my program, and that is the most frustrating thing ever. (Jaggars & Fletcher, 2014, p. 12)

In contrast, advisors were frustrated as well suggesting, “when they [advisors] made mistakes, those misunderstandings were often due to conflicting or inaccurate information provided by programs or transfer schools, which advisors then passed on to students” (Jaggars & Fletcher, 2014, p.12).

Several exceptional community colleges are changing the landscape of academic advising by utilizing technology. At Miami Dade Community College, 75 percent of students taking developmental courses enroll in a Student Life Skills course designed to help the student select a major and create an educational plan (Wyner, 2014). Walla Walla Community College in eastern Washington partnered with Economic Modeling Specialists Inc. to implement a Career Coach software pointing students to "occupations with job availability in the region, along with salary data, employment trends, educational requirements, and even specific course recommendations" (Wyner, 2014, p.21-22). At Walla Walla all students must consult with an advisor before registering each quarter ensuring that students are informed of their academic progress (Wyner, 2014).

In modeling four-year institutions which typically have a combination of professional and faculty advisors, a community college in Pasadena Texas developed a comprehensive advising training, which was so successful over 110 faculty chose to participate (Williamson et al., 2014). Williamson, Goosen, and Gonzalez (2014) state "because faculty have been trained, a great understanding of how to support students has spread throughout the faculty ranks” (Williamson et al., 2014, p. 24). Pascarella and Terenzini (2005) found when students connect with faculty in a meaningful way outside the classroom; they are more likely to be successful.
Transfer students experience challenges in post-transfer advising as well. Allen, Smith, and Muehleck (2013) found many transfer students felt they had no connection with their four-year institution advisor and were often confused by the process. Transfer students were assigned faculty advisors who knew the curriculum but had limited knowledge of transfer issues (Allen et al., 2013). More recent literature points to the concept of developing a transfer sending culture at the community college and a transfer-receiving culture at the four-year institution where communication between the two is paramount to student transfer success (Herrera & Jain, 2013).

**Transfer Admissions – Uncharted Path**

There is minimal understanding about the four-year institution transfer enrollment rates and trends associated with transfer admissions (Cheslock, 2005). Transfer admissions processes vary across institutions and in some cases among institutions in the same state system (Handel, 2013). Monaghan and Attewell (2015) indicate a streamlined admissions processes within a state system, specifically between two-year and four-year institutions, increase transfer probability. Unfortunately, policy or procedural barriers interfere with the two-year to four-year transfer admission process. Many institutions complete the transcript analysis post-enrollment contributing to credit loss and extension of time to degree (Cuseo, 2011). Transfer students typically register after native students providing them with fewer options and often complicated schedules (Cuseo, 2011). Grites (2004) states,

“Transfer students especially those who transfer at the junior level usually have rather specific courses or curricular needs. Too often they are left with unpopular course, available only at unpopular time, and/or taught by unpopular instructors. These characteristics only serve to exacerbate the “transfer shock” of the first term.” (p. 125)

As transfer students explore the cost of the four-year education, they often find financial aid policies and practices create barriers (Dowd, Cheslock, & Melguizo, 2008) Transfer students historically receive little financial aid, with late notification, and few opportunities for
scholarships (Gonzalez Canche, 2014). Similar to financial aid, residential housing policies and practices contribute to the barriers for successful transfer. Since acceptance letters are often late, transfer student’s applications for housing enter the system after traditional native students and are often wait listed (Cuseo, 2011). Because of these admission challenges, states are beginning to focus on guaranteed admission for transfer students, particularly those who earn associate’s degrees, through the use of articulation agreements (Grites, 2004; Jenkins & Fink 2015).

Guaranteed admission enables students to apply to and be accepted by both the community college and four-year institution at the same time (Bers, 2013). These programs have various names such as dual admission, joint admission, or transfer admission guarantees (Bailey et al., 2014). Students who sign up for these programs are called co-enrolled students, that is they are enrolled at two institutions at the same time (Bahr, 2012). Many students find these programs as an attempt to shorten their time to degree by taking advantage of access to courses across institutions (Bahr, 2012). As with transfer admissions in general, there is limited research on co-enrollment transfer and persistence. Utilizing data from the Beginning Postsecondary Students Longitudinal Study (BPS:04/09) and the Postsecondary Education Transcript Study (PETS:09), Wang and Wickersham (2014) explored the relationship between co-enrollment and persistence and graduation for both community college students and four-year institutions students. Wang and Wickersham (2014) found vertically co-enrolled students in comparison to non-co-enrolled had an increased factor of (RRR = 1.712, ratio of odds) of attaining a bachelor’s degree holding all other variables in the model constant. In other words, vertical co-enrollment increased the likelihood of earning a four-year degree (Wang & Wickersham, 2014). In the predicted probabilities analysis Wang and Wickersham (2014) if community college students reported no co-enrollment they predicted the probability for departures was (Pr(i) = .544) and when laterally
enrolled \( (Pr(i) = .402) \) and substantially small for vertical co-enrolled \( (Pr(i) = .294) \). These findings reveal a possible positive link between co-enrollment and four-year degree completion.

**Financial Challenges for Transfer Students**

Community college students have traditionally been less likely to take out student loans than traditional four-year students, largely due to lower tuition costs (Gonzalez Canche, 2014). According to the National Center for Education Statistics (2012), students attending two-year institutions receiving loans increases from 61 percent in 2006 to 74 percent in 2011, with an average award of $4,800 (Hackett, 2014). Perhaps this growing reliance on loans should not be a surprise given "40 % of community college students have such low incomes that they have no resources to pay for a college education" (Institute for College Access and Success, 2009, p. 1). According to the US Department of Education, as a result, to increase borrowing, community colleges now have the largest two-year cohort default rate, 21 percent for 2010 (Hackett, 2014). One reason for the increased default rate is the high percentage of students attending community college leave before completing a degree or certificate (McKinney & Burridge, 2015).

Several documented studies found community college students who borrow are at greater risk of dropping out before earning their degree (Gladieux & Perna, 2005) and those students who drop out, show a higher risk of defaulting (Field, 2015; Gonzalez Canche, 2014). Gonzalez Canche (2014) highlights two-year students represent a more vulnerable population when it comes to loan debt and its effects. The study concluded that despite the fact that two-year students can save money during the early years of college, after that, they might be more likely to require a longer time to graduate, requiring excess loan debt (Gonzalez Canche, 2014). This is due to lost credits in the transfer process and “transfer shock” (Hills, 1965), negatively affecting their academics and their progress toward degree completion. According to Gonzalez Canche
(2014), there are five distinct factors that can affect this, including whether students transferred undergraduate credits, stopped-out for six months or more, attended part-time, changed major, or attended multiple schools simultaneously.

Based on these issues, some community colleges have elected not to participate in the federal loan programs (Project on Student Debt, 2011). Baum, Ma, and Payea (2010) contend borrowing represents a wise investment for many community college students because of the higher labor market returns associated with earning a certificate or degree. Conversely, McKinney and Burridge (2015) argue community college borrowers are more likely to drop out than non-borrowers and "colleges who deny their students access to federal loans may actually be aiding their student's chances for success" (p. 301). While the rationale for not participating in the federal loan programs may be well-intended, denying students access to loans could have unintended consequences. Researchers suggest these students often turn to private loans with higher interest rates, credit cards or work longer hours, all behaviors with adverse effects to persistence to degree completion (Hossler et al., 2012; McKinney & Novak, 2013; McKinney & Burridge, 2015).

The majority of research analyzing student loan and persistence to degree completion is focused on students attending four-year institutions. In general, researchers have given limited attention to how loans impact community college students. Researchers found an award of financial aid increased the likelihood of transfer by 15 percent and financial aid was the key variable leading to a transfer student’s decision of where to transfer (Ellis 2013; Townsend, 2008). St. John and Starkey (1996) found that loans had no significant effect on persistence for community college students, whereas Hippensteel, St. John, & Starkey (1996) found for non-traditional age students (23 years or older) loans significantly reduced the likelihood of
persistence to degree. Adding to the mixed findings, Dowd and Coury (2006) indicated after controlling for background and status variables, loans had a negative effect on persistence to 2nd year and had no effect on associate degree attainment. Dowd and Coury (2006) wrote, “the empirical literature does not present consistent results, and more work is clearly needed in this area” (p. 57).

Today, current research is just as confusing. According to Gonzalez Canche (2014), there are five distinct factors that can affect two-year to four-year completion, including whether students transferred undergraduate credits, stopped-out for six months or more, attended part-time, changed major, or attended multiple schools simultaneously. Despite the fact there is an array of proven statistics working against two-year students, Gonzalez Canche (2014) and McKinney and Burridge (2015) both found incurred loan debt, for most students who actually transferred to a four-year institution, was not a factor to degree completion. Gonzalez Canche (2014) states students who started in the two-year sector and attained a four-year degree had similar amounts of debt when compared to students who initially enrolled in the four-year sector. These two-year students have also been repaying loan amounts at a similar level to four-year students. In contrast, Dwyer, McCloud, and Hodson (2012) concluded disadvantaged students with modest debt are likely to graduate; however, the likelihood of graduation for public university students from modest economic backgrounds is highly contingent on the debt loads they carry. While access to at least some loans can at times increase graduation probabilities for such students, beyond $10,000, loan debt actually undercuts graduation probabilities (Dwyer et al., 2012). To add to the mixed results, some studies suggest compared to modest to affluent economic students, loans exert a stronger negative effect on the persistence to degree completion
of lower-income and racial/ethnic minority students (Chen, 2008; Dwyer et al., 2012; Kim, 2007).

**Transfer Pathways**

Community college students are more likely to pursue their education in non-traditional patterns including interrupting enrollment, attending part-time, work while enrolled and delayed enrollment (Alfonso et al., 2005; Bailey et al., 2004; Jenkins & Fink, 2016). Research has shown part-time attendance and delay of progress are negatively correlated with the probability of attaining a two-year or four-year degree (Anderson et al., 2006; Kopko & Crosta, 2016; Ishitani, 2008; Long & Kurlaender, 2009). Furthermore, community college program offerings characterized as a cafeteria plan has proven to support the organizational goals of access but historically has been ineffective in closing the gap on college completion (Bailey et al., 2015). And despite efforts of reform in the past, scholars consistently find students who initially enroll in a community college are less likely to complete a bachelor’s degree than compared to four-year native students (Anderson et al. 2006; Bailey et al., 2010; Berkner et al., 2002; Bok, 2015; Calcagno et al., 2007; Cohen, 2012; Dowd 2007; Handel, 2013; Horn & Skomsvold, 2011; Juszkiewicz, 2016; Monaghan & Attewell, 2015; Smith et al., 2012; Wang, 2009).

To address the college completion gap, an underlying theme for the need to develop and foster four-year institution partnerships with community colleges emerges throughout the research (Anderson et al., 2006; Handel 2013; Monaghan & Attewell, 2015; Townsend, 2008). In addition to credit loss, transfer shock, and confusing transfer admissions policies, many community college students find the greatest barrier is choosing a pathway to a major and career outcome (Bailey, Jaggars, Jenkins, 2015). In a study on student perceptions of their community college experience, Nodine, Jaeger, Venezia, and Bracco (2012) found in interviews students
who started at a community college to explore their options were quite surprised to find out that not all courses counted toward the major they eventually selected. In 2014, Public Agenda performed a study to explore how community colleges could support student progress. The research found that students were frustrated in trying to navigate a confusing system and overall felt well-defined pathways would increase their chances for successful completion (Kadlec & Gupta, 2014).

There are many forms of partnerships and combinations of options, for instance: (a) two plus two programs, whereby students take two-years of courses at the community college and transfer them to a specific four-year institution; (b) program articulations which align specific major curriculum from two-year institutions to seamlessly transfer to that major at four-year institutions; and (c) dual admission agreements which enable student to simultaneously apply to, and be accepted by, both the community college and transfer institution (Bers, 2013). Previous research shows transfer pathways as often inefficient and ineffective (Bailey, 2012; Horn & Skomsvold, 2011; Townsend & Wilson, 2006). Monaghan and Attewell (2015), however, suggest an increase in specific pathways and system-wide partnerships would enhance communication between sending and receiving institutions, as well as facilitate advisement to and from, increasing transparency in the transfer process. The ineffective dimensions of transfer pathways are consistent with the research literature “(a) credit loss, (b) inadequate articulations, and (c) structural and institutional barriers” (Taylor & Jain, 2017 p. 277). Recent research out of the Community College Research Center at Teachers College in Columbia University has shed national attention on transfers and the various pathways to degree completion by tracking transfers and looking for themes that impact the ineffective practices (Dougherty et al., 2017; Jenkins & Fink, 2016; Jenkins, Lahr, & Fink, 2017; Xu, Ran, Fink, Jenkins, & Dundar, 2017)
Transfer Pathway Reform

Based on the new research attention placed on transfers, higher education institutions and state systems are redesigning the conventional college through the implementation of guided pathways (Bailey, Jaggars, & Jenkins, 2015). “The guided pathway approach to redesign starts with students’ end goals in mind, and then rethinks and redesigns programs and support services to enable students to achieve these goals” (Bailey et al., 2015, p. 16). In 2016, three research institutes, Community College Research Center, National Student Clearing House (NSC), and the Aspen Institute joined together to address the lack of comparable measures of transfer performance from two-year to four-year institutions (Jenkins & Fink, 2016). Using an NCS data set of \( n = 719,371 \) degree-seeking students who began at a community college in Fall 2007, Jenkins and Fink (2016) found 33 percent of students transferred to a four-year institution with only 14 percent completing a bachelor’s degree within six years. Most interesting, Jenkins and Fink (2016) did not find differences based on community colleges attended, but rather, found larger variations in average completion based on type or four-year institutions. Students had higher completion rates at selective colleges, public colleges, and those who serve higher socioeconomic status students (Jenkins & Fink, 2016).

Jenkins and Fink (2016) study measured institution influence on student transfer outcome. To expand the research on effective partnerships between two-year and four-year institutions, Jenkins, Lahr, and Fink (2017) conducted field research in six different states and identified three strategies that led to successful transfer outcomes (1) prioritizing transfer, (2) creating clear program pathways and (3) providing tailored transfer advising. Utilizing the NCS Fall 2007 cohort data, Xu et al. (2017) developed a two-stage analytic framework for identifying partnerships of two-year and four-year institutions that would enhance transfer and bachelor
degree completion. Their evaluation found "more than 40,000 unique community college to four-year college direct transfer partnerships" (Xu et al., 2017, p. 24). Additionally, Xu et al. (2017) added to the historical thoughts that vocational programs defer transfer to four-year degree pathways. Students in vocational programs were 33 percent less likely to transfer than community college students enrolled in an academic program (Xu et al., 2017).

**Guided Pathway Models**

Successful guided pathway models provide organized frameworks that include changes in college and program structures as well as address pedagogy, advising and student support services (Bailey et al., 2015). As higher education leaders begin to implement the guided pathway model, two potential challenges have surfaced. As stated earlier in the review of literature, institutional culture is often shaped by faculty and faculty resistance to the guided pathway program, specifically at four-year research institutions, may thwart the implementation of guided pathways (Rose, 2016). Perhaps more challenging is the socioeconomic and academic challenges students bring with them to community college. Since many students arrive with significant outside challenges, those barriers may add complications to students staying on and following through a guided pathway program (Rose, 2016). Despite the criticism, for now, the guided pathway model is moving many community colleges away from the historical cafeteria model to an integrated model for student success.

The guided pathway movement has been fueled by the financial support of the Bill & Melinda Gates Foundation, Lumina Foundation and the American Association of Community Colleges (AACC) (Bailey et al., 2015). One leader in curriculum redesign is California where legislature's appropriated $150 million to support the implementation of guided pathway reform at 114 California community colleges (Jenkins et al., 2017). Adding to this investment, the
AACC is providing support to over 30 colleges in the adoption of guided pathway reform (Bailey et al., 2015). For the guided pathway model to be successful, it must extend to the receiving school. In one recent example, Guttman Community College in New York City extended the pathway forward to the receiving institution City University of New York (Weinbaum, Rodriguez, Bauer-Maglin, 2013). In a different approach, Arizona State University (ASU) took the lead in developing two-year to four-year pathways by extending program maps backward to the community college (Bailey et al., 2015). ASU extended their pathway program to develop Transfer Admission Guarantees (TAGs) with all community colleges in Arizona and more in California (Bailey et al., 2015).

Programs like TAGs and Joint Admission play a significant role in transfer pathway reform. Although these programs began to take hold starting in the 1990’s, only recently is great attention being given to their effectiveness. In a report issued by the California Community College Chancellor’s Office (2015) stated about their two-year to four-year guarantee admissions program,

> The associate degree for transfer program, now in its third year, provides community college students with priority admission to a CSU campus. Once admitted, students complete an additional 60 units to earn a bachelor's degree. The transfer program's popularity soared in the 2013 - 2014 academic year, with nearly 12,000 associate transfer degrees conferred by community colleges, more than twice as many as the previous year. (California Community College Chancellors Office, 2015, p. 7)

Massachusetts has been a top national player in admission guarantees and has offered a Joint Admission program since 1995 (de la Torre & Wells, 2014). In an evaluation of statewide transfer policies, de la Torre and Wells (2014) note, “This [Joint Admissions] is the first visible indication that policymakers recognized the need for more comprehensive guidelines” (p.17). Although Massachusetts has been a leader in Joint Admissions, researchers found data reporting
and monitoring Joint Admissions does not appear to be systematically collected or analyzed for performance (da la Torre & Wells, 2014)

**Joint Admissions Agreements**

Transferring from a community college to a four-year institution can be confusing, and the bureaucracy surrounding transfer can be a hindrance to many students (Handel, 2013). As stated earlier in the review of literature, presence of state policy does not seem to increase transfer rate between two-year and four-year institutions. (Anderson et al., 2006; Gross & Goldhaber, 2009; Roksa & Keith, 2008; Reynold, 2007). Monaghan and Attewell (2015) found academic momentum of two-year and four-year college students only began to significantly differ in the "third and later years when community college students started to fall behind four-year college counterparts in credit accumulation" (p. 85). In response, state policymakers have attempted to impact persistence to bachelor degree completion through programs that allow for community college students to be admitted to a four-year institution prior to the transition from associate degree to bachelor degree (Wang, 2009). These programs are known as Guarantee Admission, Joint Admission, Dual Admission, Joint Enrollment and Transfer Admission. Guarantees are essential grounded on the same principle, to recognize the student as enrolled in both a two-year and four-year institution rather than classify the student as a transfer (Cope, 2012; Morris & Cox, 2016). Research on the success of these programs is minimal.

Dupraw and Michael (1995) studied outcomes of TAG students in the California system and found that TAG students, when compared to native students, earned roughly the same GPAs. The Transfer Velocity Project (2010) found a significant relationship between community college transfer rates and the use of Transfer Admission Agreement and TAGs. Quin (2013) assessed the effects of inter-institutional guaranteed transfer policies on post-secondary outcomes.
and found TAG participation increased the number of students transferring and attaining a bachelor’s degree with minimal change in the quality of these transfers, such as GPA. Most recently Lewis, Bracco, Moore, Nodine, and Venezia, (2016) performed a qualitative study and found despite improved communication, students were still confused and the outline pathway benefited a relatively small proportion of students who had clear academic goals upon entry to the community college.

After Boden (2002) had shed light on a need for change in the transfer process from a community college to a flagship university, policymakers established the Joint Admissions Articulation (JAA) in Rhode Island. Similar to TAG, the intent of the JAA was to provide a dual identity for the transfer student and to facilitate student transition from an associate's to bachelor's degree with the goal to provide clear pathways that increased four-year degree completion and reduced time to degree and useless credit. (Rhode Island Board of Governors, 2007). The JAA was established in 2003 and provided guaranteed admission to community college students. Students who signed the agreement prior to 30 credits earned, matriculated into one of the JAA transfer-track programs, maintained a 2.4 or higher cumulative GPA and completed an associate's degree received guaranteed admission to the four-year institution. Those community college students who do not elect to participate in JAA must apply through the normal transfer admission process and compete for regular admissions to the university. The JAA was designed to impact transfer pathway by limiting credit loss, providing dual academic and admissions advising from both the community college and four-year state institution, and attempting to build a strong relationship among faculty course development and student services at both institutions. Embedded in the ethos of a dual identity, the JAA program was designed to allow the student to participate in campus life at both the community college and the receiving
institution. Lastly, the JAA provided financial scholarships to high achieving transfers to offset the cost of the four-year institution (Rhode Island Board of Governors, 2007).

Formulated by the Board of Governors in August of 2013 and revised in January of 2007, the goals and objectives are outlined as:

A primary goal of the Rhode Island Board of Governors for Higher Education (RIBGHE) is to increase the baccalaureate attainment rate of Rhode Island’s residents. [There are] four supporting goals:

• To facilitate students’ transition from an associate’s to a bachelor’s degree program. The JAA will have achieved this goal if the system can demonstrate a significant upward trend in transfer enrollment and persistence to graduation. The trend is expected to begin in the second and third years following implementation of the JAA.

• To increase access to further education by underrepresented groups as evidenced by increased graduation rates of those groups in the second and third years following implementation of the JAA.

• To strengthen cooperation among the institutions as evidenced by the joint development of a core of balanced general education that meets specified competencies. These competencies will provide a common set of skills and knowledge that help prepare students to pursue study in their majors at the senior institutions.

• To reduce the cost of higher education for students through an improved rate of transfer credit acceptance (Rhode Island Board of Governors, 2007)

Summary

This literature review aimed to explore facets that encapsulate the two-year to four-year experience by examining the literature on the impetus of community college and four-year institutional missions, state policies impacting transfer policies, characteristics of transfer students from their likelihood of transferring through their degree completion at a four-year institution, and new research on the redesign of the transfer pathway. Over the last decade, attention on transfer students and their role in the college completion agenda has become a focus of higher education research (Bailey et al., 2015; Baker, 2016; Hodara et al., 2017; Jenkins et al.,...
2017; Kopko & Crosta, 2016; LaSota & Zumeta, 2016; Monaghan & Attewell, 2015; Stern 2016; Taylor & Jain, 2017; Wyner, 2014; Xu et al., 2017). It is well established through the literature that approximately 80 percent of community college students intend to transfer to a four-year institution to earn a four-year degree, but only 17 percent reach their goal (Shapiro et al., 2017). The obstacles impeding bachelor degree completion are shared among both the community college and four-year institution. To improve the transition from one institution to the other, and to provide the support to transfers through the process, this review of literature suggests two-year and four-year institutions must work together as efficient and effective partners.

Hossler et al. (2012) conclude improvements in college completion occur when they are driven by a deep interest in student success. The transfer pathway is vital if American higher education institutions hope to meet the college completion agenda. To answer the call for a better-educated workforce and to recognize that community colleges are central to access to education for underserved students, pathways like Joint Admission Agreements must be considered. The literature review shows contradictory research on the relationship between articulations and degree completion. Significant studies have focused on the student experience of transfer with less attention on the impact of institutional structures, policies, and specific practices that promote four-year degree completion (Bailey et al., 2015), More specifically, there is little research exploring TAGs or JAA’s and the relationship on persistence to the bachelor's degree. To look at the gap in the existing literature, this study will explore if there is a relationship of participation in JAA on degree completion within a small New England state system.
The next chapter on methodology includes detailed descriptions of the research design, participants, instrumentation, data collection method, data analysis, and possible limitation and delimitation of the study.
III. Methodology

Introduction

Providing community college students access to complete a four-year degree requires coordination at the state and institutional levels. Although a wide body of research on Articulation Agreements, (hereafter ArA’s) exists (An, 2015; Hills, 1965; Jenkins & Fink, 2016; Juszkiewicz, 2016; Monaghan & Attewell, 2015; Townsend, 2008), little research can be found on Joint Admission Agreements (hereafter JAA’s), and, distinctively, the relationship of JAA’s to the completion of four-year bachelor’s degrees. This quantitative ex-post facto study examined a New England state system JAA program. The JAA is a dual-admissions agreement that facilitates students’ progression from the associate degree to the baccalaureate degree through identified pathways. Community college students who enrolled in the JAA pathway program received a guarantee admission to a public four-year flagship institution in the state system once completing an associate’s degree. This chapter outlines the research questions, research design, participants, variables, data collection, method of data analyses, limitations, and delimitations of this study.

Purpose

This retrospective causal-comparative study investigated if bachelor degree completion and time to completion differs between student participation in the Joint Admissions Agreement (JAA) compared to non-JAA transfers. A post-positivist approach was the philosophical basis for this causal-comparative study (Phillips & Burbules, 2000). The design allowed the researcher to analyze ex-post facto data to test assumptions about previously gathered variables that may relate to or explain degree completion of JAA and non-JAA transfers. The quantitative analysis attempted to determine if there was relationship between the JAA transfer and persistence to four-year degree completion.
Research Questions

This study explored the following research questions to investigate the relationship of various independent variables on four-year degree completion and time to degree completion for students who participated in a Joint Admissions Articulation (JAA) program. The following research questions guided this study;

RQ1: Is there a significant relationship between student participation in the JAA program and bachelor degree completion?
RQ2: Is there a significant difference in bachelor degree time-to-completion between JAA students and non-JAA transfer students?
RQ3: To what extent and in what manner is variation in time-to-degree completion rates explained by four-year cumulative GPA, the total number of credits earned, degree type, Pell, and demographics for non-JAA, and JAA?

Research Design

To address the research questions, this non-experimental causal-comparative study utilized longitudinal ex-post facto data. The causal-comparative research was non-experimental in which the “investigator compares two or more groups in terms of a cause or independent variable that has already happened” (Creswell, 2014, p.12). This design evolved from an ex-post facto study (Boden, 2002) which was influential in establishing the JAA program. To explore the relationship between JAA and non-JAA transfers, quantitative data were gathered from archival student records extracted from the four-year state institution. Through statistical analysis, this study examined the relationship of Pre-JAA to four-year degree completion and attempted to determine if there was a relationship between participation in the JAA and persistence to four-year degree completion.
Participants

In this study, the quantitative ex-post facto data were gathered from archival student records provided by the four-year public flagship university, from a small New England state. The study consisted of two sample populations. Sample one was Pre-JAA (n = 214) data originated from Boden (2002) before the implementation of the JAA pathway program and served as observational data for this study. Sample one is comprised solely of non-JAA transfer students who completed an associate’s degree from a community college before transfer in the fall of 1996 or fall of 1997 with the intention of completing a four-year degree.

Sample two was ex-post facto data extracted from the state flagship institution’s PeopleSoft student record files. Sample two data (n = 843) included all JAA and non-JAA students who transferred with an associate’s degree from a community college to the state flagship university between fall 2011 and fall 2015. To stay within the scope of this study, sample two data were cleaned to remove any students who transferred from a two-year non-community college or a four-year college regardless if they had earned an associate’s degree. Subsequently, nursing transfers from the community college were the only major who completed their four-year degree online at the flagship university and in seven-week intervals, nursing transfers were removed from the data. Since the purpose of this study is to explore the relationship of a Joint Admissions program on degree completion and time-to-degree in a small New England state, a subset of sample two was extracted for supplemental analysis which could have influence on state policy. Transfer students who participated in the JAA program were identified as (n =121).
Instrumentation

In this study, a causal-comparative non-experimental design provides the scaffolding to investigate if there was a relationship between JAA and non-JAA transfer student participation and degree completion. The office of Institutional Research at the four-year institution provided the waiver for access to the ex-post facto data. Through a structured query language (SQL) the data were extracted in December 2017 from the student record system and transferred to a master Excel spreadsheet. To ensure integrity, an institutional trustee, whose role requires the collection, creation, maintenance, security, and semester-by-semester updating of all college-related student-level records assisted in the preparation of the data. Other demographics such as gender, age, and ethnicity were included in the data to see if they relate to or explain a relationship to degree completion of JAA and non-JAA transfers.

The data were coded using the student record system and included the variables defined in Table 1, Variable Descriptions and coding. JAA were coded as a 1 and non-JAA as a 0. Completers were coded as a 1 and non-completers as a 0.
Table 1: Variable Descriptions and coding

<table>
<thead>
<tr>
<th>Variable</th>
<th>Measurement</th>
<th>Coded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male, Female</td>
<td>Male = 0; Female = 1</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>White, Non-white, not-specified</td>
<td>White = 0; Non-White = 1; Not-Specified = 3</td>
</tr>
<tr>
<td>Age</td>
<td>From date of birth to 2017</td>
<td>Numeric scale</td>
</tr>
<tr>
<td>Pell Eligibility</td>
<td>Students were qualified for Pell grants.</td>
<td>Non-Pell = 0; Pell = 1</td>
</tr>
<tr>
<td>JAA status</td>
<td>Identified as transfers who participated in JAA program</td>
<td>Non-JAA = 0; JAA = 1</td>
</tr>
<tr>
<td>Total Cumulative Transfer Credits</td>
<td>All credits earned at all transfer institutions including test credit</td>
<td>All attempted earned credits on all transcripts prior to transfer.</td>
</tr>
<tr>
<td>Admit Term</td>
<td>First official semester enrolled at the state institution</td>
<td>Month and year, e.g. Fall 2012 or Spring 2013.</td>
</tr>
<tr>
<td>Completion Term</td>
<td>Conferred term of four-year degree completion</td>
<td>Month and year, e.g. Fall 2012 or Spring 2013.</td>
</tr>
<tr>
<td>Completion Status</td>
<td>Completed four –year degree by May 2015</td>
<td>Non-complete = 0; Complete = 1</td>
</tr>
<tr>
<td>Time to degree completion</td>
<td>Calendar year calculation.</td>
<td>Completion in 4 continuous semesters = 1.75 years</td>
</tr>
<tr>
<td>Total Cumulative Earned Credits</td>
<td>All credits earned</td>
<td>All earned and transfer credits posted on State institution transcript</td>
</tr>
<tr>
<td>Total Cumulative GPA</td>
<td>Cumulative GPA at time of four-year degree completion</td>
<td>Measured on a 4.0 scale</td>
</tr>
<tr>
<td>Average Units taken all semesters</td>
<td>Units averages fall/Spring, summer and J-term</td>
<td>Numeric Scale</td>
</tr>
</tbody>
</table>

Data Collection

With permission from the Institutional Review Boards (IRB), the institutional research department at the four-year state research university provided a waiver to use ex-post facto data from their archival student record system. The file included longitudinal data on each transfer student who attended a community college, completed an associate’s degree by August 2014, and transferred to the four-year state research university between fall 2011 and fall 2015. The
data were pulled in December 2017 through a structured query language (SQL) and extracted into Microsoft Excel.

Sample one \((n = 214)\), was archival data from a previous study (Boden, 2002) and used as observational data in this study. Sample two data \((n = 843)\) included all JAA and non-JAA students who transferred with an associate’s degree from a community college to the state flagship university between fall 2011 and fall 2015. To stay within the scope of this study, sample two data were cleaned to remove any students who transferred from a two-year non-community college or a four-year college. Nursing transfers were removed from the data since they completed their four-year degree online at the flagship university and in seven-week intervals. Sample two was subdivided into two comparison groups: JAA participants \((n = 121)\) and non-JAA participants \((n = 722)\). For comparison analysis, non-JAA students who transferred from the small New England state community college were extracted and recognized as \((n = 675)\).

Participants of this study were restricted to those individuals who had earned an associate’s degree at a state community college prior to their first term at the four-year state flagship institution. Transfer students from institutions other than community colleges were eliminated from this study. Additionally, participants were limited to only those pursuing their first bachelor’s degree. For this study, the following independent variables were collected for analysis; four-year completion GPA, time to degree completion, total number of transfer credits, total number of credits earned, degree type and Pell eligible, as well as, demographics such as age, gender, and ethnicity.
Data Analysis

To address the three research questions, this study employed quantitative statistics using Statistical Package for Social Science (SPSS). For sample two, the analysis began with a frequency polygon to explore if there was a relationship between JAA participation and bachelor degree completion and JAA on time to degree. A t-test attempted to provide statistical analysis to answer the first two research questions.

RQ1: Is there a significant relationship between student participation in the JAA program and bachelor degree completion? A t-test between JAA and non-JAA students by degree completion attempted to determine if there is a difference in degree completion of JAA and non-JAA participants.

RQ2: Is there a significant difference in bachelor degree time to completion between JAA students and non-JAA transfer students? A t-test between JAA and time to completion and between non-JAA and time to completion explored if there was a significance of JAA participation on time to degree.

RQ3: To what extent and in what manner is variation in bachelor degree completion rates explained by four-year cumulative GPA, the total number of transfer credits, degree type, Pell eligibility and demographics on JAA and non-JAA? A one-way Analysis of Variance ANOVA were conducted to compare the effectiveness of various demographics on time-to-degree completion with JAA status in the model. A stepwise linear regression analysis model was built to examine the relationship between time to degree completion and the following variables; cumulative GPA, the total number of transfer credits, JAA status, and Pell status, for completers. This analysis attempted to identify if and to what degree the variable explains time to degree completion. The results from the analysis looked for indicators of strongest contributors
to time to degree completion for JAA versus non-JAA.

**Limitations**

According to McMillan and Wergin (2010) "a limitation of an ex-post facto study is that the intervention has already occurred: it is not directly manipulated or controlled by the researcher" (p.16). Since the study will rely on the data provided by the flagship state higher education institution, there are no independent controls. Additionally, the researcher has limited knowledge of how the data were compiled and managed at the institution. It is assumed that the data were correctly imputed and gathered consistently throughout the longitudinal time frame. Furthermore, the first data set from Boden (2002) was created prior to this research study. Since there is no known external validity of the data, the researcher acknowledges this study is limited.

Given this is a causal-comparative design; the relationship between two or more variables does not necessarily mean a causal connection between the variables can be established. There could be many reasons outside the scope of this study shaping why multiple variables are related or influence one another (Gay, Mills, & Airasian, 2006). Additionally, this study examined four-year degree completion at one public flagship state research university. It is possible differences between institution types will affect the results.

This study examined four-year degree completion at one flagship state research university. It is possible differences between institution types will affect the results. The researcher assumes both transfer institutions and receiving institutions are dedicated to student success, creating a culture among faculty and staff committed to the transfer population and process.

Given the participants of this study were three different groups; group one pre-JAA, group two JAA, and group three non-JAA, it is possible that the groups are not equivalent. The
researcher recognizes that one or more variables among the group of students may differ specifically over the longevity of the data time frame.

The scoop of this design excluded the impact of course load as it relates to time to completion. The number of courses a student takes within a semester or year may influence degree completion or persistence to completion.

Delimitations

The scope of this study is a Joint Admission pathway program in a small New England state system. Findings may not be applicable to generalize to a larger state system with multiple layers of institutions. The scope of this design excluded the impact of course load as it relates to time to completion. The number of courses a student takes within a semester or year may influence degree completion or persistence. Additionally, this study only looked at transfers who completed an associate’s degree before transfer. Persistence and degree completion outcomes may vary based on transfer population and transfer behavior patterns.

Additionally, this study only looked at transfers to the state research institution who completed an associate’s degree from a community college. The researcher has no knowledge of the reasons why students choose to attend the community college for first-year entry. Many students transfer to a four-year institution at various times in their educational cycle. The associated degree perimeter in this study, hence, may limit the extent to which the results can reach beyond transfer populations with associate’s degrees. Persistence and degree completion outcomes may vary based on transfer population and transfer behavior patterns.

Summary

Increasing effectiveness of transfer pathways is vital if higher education institutions hope to attain national college completion goals. After Boden (2002) shed light on a need for
developing clear pathways in a small state system, policymakers established the JAA. This study explored the causal impact participation in the JAA program had on four-year degree completion. This longitudinal study identified specific indicators that may or may not have an influence on degree completion at a four-year institution. Research exploring this relationship provided insight useful for policy leaders who influence statewide transfer and articulation programs from community colleges to four-year institutions. It also provided guidance for resource allocation and budgetary alignment to answer the call in the national college completion agenda. The next chapter, Chapter 4, presents the results of this research design.
IV. FINDINGS

Introduction

This causal-comparative study sought to investigate the relationship between participation in a state joint admission program and four-year degree completion. Specifically, the purpose of this causal-comparative study was to investigate the differences in baccalaureate degree completion and time-to-degree completion among Joint Admission Agreement (JAA) students and non-JAA students who transferred from a community college with an earned associate’s degree to a state four-year flagship university. The post-positivist approach was used to allow the researcher to analyze ex-post facto data to test assumptions about previously gathered variables that may relate to or explain degree completion of JAA and non-JAA transfer students. This chapter will describe the findings obtained from this study.

Research Questions

The following research questions guided this study:

RQ1: Is there a significant relationship between student participation in the JAA program and bachelor degree completion?

RQ2: Is there a significant difference in bachelor degree time-to-completion between JAA students and non-JAA transfer students?

RQ3: To what extent and in what manner is variation in time-to-degree completion rates explained by four-year cumulative GPA, the total number of credits earned, degree type, Pell, and demographics for non-JAA, and JAA?

Organization of Data Collection

To address the research questions, the data were compiled in two excel files. Sample one was a dataset downloaded into Microsoft Excel from an ex-post facto study (Boden, 2002) which was influential in establishing the JAA program. The pre-JAA cohort data were from students who transferred in fall semester 1996 and 1997 and serves as observational data for this study. Sample one was \( n = 214 \) students who graduated from a state community college with an associate’s degree and transferred to the state flagship university. Sample two was ex-post facto
data extracted from the state flagship institution’s PeopleSoft student record files. The data were pulled in December 2017 through a structured query language (SQL) and extracted into Microsoft Excel. Sample two data \((n = 843)\) included all JAA and non-JAA students who transferred with an associate’s degree from a community college to the state flagship university between fall 2011 and fall 2015. To stay within the scope of this study, sample two data were cleaned to remove any students who transferred from a two-year non-community college or a four-year college despite the fact they had earned an associate’s degree, reducing the original population sample of \((n = 1,177)\) to \((n = 975)\). Since nursing transfers from the community college were the only major who completed their four-year degree online at the flagship university and in seven-week intervals, nursing transfers were removed from the data. For purposes of this study, sample two is \((n = 843)\).

Since the purpose of this study is to explore the relationship of a Joint Admissions program on degree completion and time-to-degree in a small New England state, a subset of sample two was extracted for supplemental analysis which could have influence state policy. Transfer students who took part in the JAA program were identified as \((n =121)\). Additionally, non-JAA students who transferred from the small New England state community college were recognized as \((n =675)\).

The student’s first term of attendance at the four-year state institution as recorded in the student record system was used as the start date for deriving baccalaureate time-to-degree. A calendar year was used to calculate time-to-degree hence, a student who started in the fall semester and completed four semesters, graduating in the spring of their fourth semester, would equal 1.75 years for degree completion. Students graduating the following summer would be coded as 2.0 years. These values were created to support the continuous data measurement level
chosen in the methodology of the study in calculating four-year degree completion. The difference between the student’s start term and graduation term was used in calculating the measured value of time-to-completion. Stop outs by students were not recognized in the baccalaureate time-to-degree calculation.

Participants of this study were restricted to those individuals who had earned an associate’s degree at a state community college prior to their first term at the four-year state flagship institution. Transfer students from institutions other than community colleges were eliminated from this study. Additionally, participants were limited to only those pursuing their first bachelor’s degree.

**Organization of the Data Analysis**

The data from this study are presented in two sections. The first section details the data extracted from all samples, pre-JAA, non-JAA, and JAA. The pre-JAA data provides baseline descriptive data used to show if sample two has any influence on impacting overall degree completion. The second section details the data extracted from the four-year institution’s PeopleSoft student enrollment management system, which includes analysis and demographics of JAA and non-JAA participants \((n = 843)\) used to address each research questions. For RQ1, a \(t\)-test was used to explore the likelihood of degree completion in relationship to JAA and non-JAA participants. For RQ2, a \(t\)-test was used to explore if there is a significant difference in bachelor degree time-to-completion between JAA students and non-JAA transfer students. For RQ3, descriptive statistics, ANOVA, and stepwise linear regression analysis were used to investigate time-to-degree completion as it relates to four-year cumulative GPA, the total number of credits earned, Pell influence and demographics for JAA, and non-JAA.
Demographics and Descriptive for all Samples

Sample one was Pre-JAA and included \((n = 214)\) students who graduated from a community college with an associate’s degree and transferred to the four-year flagship institution in the fall semester of either 1996 or 1997. Sample two was post-JAA and included \((n = 843)\) students who graduated from a state community college with an associate’s degree and transferred to the four-year flagship institution between the fall of 2011 and fall of 2015. Students pursuing a degree in nursing were removed from the original sample two \((n = 975)\) as their four-year degree program was solely online and courses were delivered in seven-week intervals. Table 1, Demographic Characteristics of All Participants: Pre-JAA, non-JAA, JAA shows demographic characteristics about participant gender, ethnicity, and type of degree, Bachelors of Arts (BA) or Bachelors of Science (BS). Displayed, the data are the \((f)\) frequency of the characteristic and \((\%)\) percentage of the characteristic. For all samples, female participation is higher than male: Pre-JAA (female = 60%, male = 40%), non-JAA (female = 53%, male = 47%), and JAA (female = 54%, male = 46%). For all samples, students were more likely to earn a BS degree over a BA degree: Pre-JAA (BA = 16%, BS = 34%), non-JAA (BA = 19 %, BS = 28%), and JAA (BA = 30%, BS = 40%). Participants in all three groups where predominantly White (Pre-JAA \(n = 68\%), non-JAA \(n = 73\%), JAA \(n = 68\%). Pre-JAA data had a higher selection of Not specified \((n = 26\%)\) in comparison non-JAA \((n = 7\%)\) and JAA \((n = 4\%).}
Table 1
Demographic Characteristics of All Participants: Pre-JAA, non-JAA, JAA

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Pre-JAA</th>
<th></th>
<th>Non-JAA</th>
<th></th>
<th>JAA</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f</td>
<td>%</td>
<td>f</td>
<td>%</td>
<td>f</td>
<td>%</td>
</tr>
<tr>
<td>Gender:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>85</td>
<td>40</td>
<td>339</td>
<td>47</td>
<td>56</td>
<td>46</td>
</tr>
<tr>
<td>Female</td>
<td>129</td>
<td>60</td>
<td>383</td>
<td>53</td>
<td>65</td>
<td>54</td>
</tr>
<tr>
<td>Degree Type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelors of Art (BA)</td>
<td>35</td>
<td>16</td>
<td>140</td>
<td>19</td>
<td>36</td>
<td>30</td>
</tr>
<tr>
<td>Bachelors of Science (BS)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Degree Earned</td>
<td>104</td>
<td>49</td>
<td>381</td>
<td>53</td>
<td>36</td>
<td>30</td>
</tr>
<tr>
<td>Ethnicity:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>146</td>
<td>68</td>
<td>527</td>
<td>73</td>
<td>97</td>
<td>68</td>
</tr>
<tr>
<td>Non-White</td>
<td>15</td>
<td>6</td>
<td>147</td>
<td>20</td>
<td>19</td>
<td>18</td>
</tr>
<tr>
<td>Not-Specified</td>
<td>53</td>
<td>26</td>
<td>48</td>
<td>7</td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>

Note. Pre-JAA n = 224, non-JAA n = 722, JAA n = 121

To show all groupings of participants, Pre-JAA, non-JAA, and JAA, descriptive statistics were performed on several independent variables. As shown in Table 2, Descriptive Statistics for Total Transfer Credits, Credits Earned and GPA for All Participants, the mean and standard deviation are represented for total credits transferred, total credits earned at the four-year institution, and four-year cumulative GPA. Pre-JAA students transferred an average of 73 credits \((M = 73.1)\) in comparison to non-JAA \((M = 60.7)\) and JAA \((M = 60.1)\) students who transferred an average of 60 credits. Pre-JAA students had a \((M = 2.91)\) cumulative GPA. In contrast, JAA students earned the highest GPA \((M = 3.08)\) with non-JAA earning the lowest GPA \((M = 2.55)\) resulting in a .53 difference in the mean GPA.
Table 2
Descriptive Statistics for Total Transfer Credits, Credits Earned and GPA for All Participants

<table>
<thead>
<tr>
<th>Variables</th>
<th>n</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-JAA</td>
<td>214</td>
<td>73.1</td>
<td>14.3</td>
</tr>
<tr>
<td>Total Trans. Cr.</td>
<td></td>
<td>111.2</td>
<td>35.5</td>
</tr>
<tr>
<td>Total Earned Cr.</td>
<td></td>
<td>2.91</td>
<td>.69</td>
</tr>
<tr>
<td>Cum. GPA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>non-JAA</td>
<td>722</td>
<td>60.7</td>
<td>9.88</td>
</tr>
<tr>
<td>Total Trans. Cr.</td>
<td></td>
<td>108.7</td>
<td>31.8</td>
</tr>
<tr>
<td>Total Earned Cr.</td>
<td></td>
<td>2.55</td>
<td>1.21</td>
</tr>
<tr>
<td>Cum GPA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JAA</td>
<td>121</td>
<td>60.1</td>
<td>3.38</td>
</tr>
<tr>
<td>Total Trans. Cr.</td>
<td></td>
<td>115.9</td>
<td>19.3</td>
</tr>
<tr>
<td>Total Earned Cr.</td>
<td></td>
<td>3.08</td>
<td>.81</td>
</tr>
<tr>
<td>Cum GPA</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Demographic and Statistics of Final sample JAA/non-JAA

Sample two, which includes JAA and non-JAA participants were the participants used to address the three research questions. An analysis was performed to explore if there were any relationships between demographic variables and JAA and non-JAA status. Inspection of the data in Table 3, Chi-Square JAA and non-JAA, Comparison of Demographics (n = 843), reveals no significant differences in the relationship of ethnicity (White residual = .5, Non-White residual = .8, p = .116), gender (Male residual = -.1, Female residual = .1, p = .927), and degree type (residual = 0, p = .902) between JAA and non-JAA participants.
To explore if there were any significant measurable differences among the two comparison groups JAA (n = 121) and non-JAA (n = 722), an independent $t$-test was calculated for several independent variables. As shown in Table 4, $t$-test of JAA and non-JAA Exploration of Difference of Various Independent Variables (n = 843), total cumulative GPA, average units taken per semester, total transfer credits, total cumulative credits earned, and age were reported. The test results of the $t$-test were significantly higher for JAA cumulative GPA ($t = 4.56, p = .001, d = .51$ medium, $M = 3.08$) over non JAA ($M = 2.55$), JAA average units taken were significantly higher ($t = 2.95, p = .001, d = .35$ small/medium, $M = 11.9$) than non-JAA ($M = 10.9$), JAA total cumulative credits earned was significantly higher ($t = 2.42, p = .001, d = .27$ small, $M = 115.9$) than non-JAA ($M = 108.8$) and JAA age was significantly lower ($t = -5.38, p = .001, d = .48$ medium, $M = 26.8$) than non-JAA ($M = 29.9$). There appears to be no significance
for total transfer credits ($t = 1.21, p = .512, d = .27$ small, JAA $M = 60.1$, non-JAA $M = 60.7$)). JAA participants earned on average a letter grade higher than non-JAA. Additionally, JAA participants earned on averaged ($M = 11.9$) units per semester in comparison to non-JAA who averaged 1 unit less per semester ($M = 10.9$). JAA participants earned 7 more unit credits ($M = 115.9$) than non-JAA student’s ($M = 108.8$.) Furthermore, JAA students ($M = 26.8$) on average were 3 years younger than non-JAA participants ($M = 29.9$)

Table 4
$t$-test JAA and non-JAA Exploration of Differences of Various Independent Variables ($n = 843$)

<table>
<thead>
<tr>
<th>Demographic</th>
<th>Participation</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>non-JAA</td>
<td>JAA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
<td>$n$</td>
<td>$M$</td>
<td>$SD$</td>
<td>$n$</td>
<td>$t$</td>
<td>$p$</td>
</tr>
<tr>
<td>Cum Total GPA</td>
<td>2.55</td>
<td>1.21</td>
<td>722</td>
<td>3.08</td>
<td>.814</td>
<td>121</td>
<td>4.56*</td>
<td>.001</td>
</tr>
<tr>
<td>Avg. units Taken</td>
<td>10.9</td>
<td>3.16</td>
<td>626</td>
<td>11.9</td>
<td>2.60</td>
<td>118</td>
<td>2.95*</td>
<td>.001</td>
</tr>
<tr>
<td>Total Transfer Cr.</td>
<td>60.7</td>
<td>9.88</td>
<td>722</td>
<td>60.1</td>
<td>3.38</td>
<td>121</td>
<td>1.21</td>
<td>.512</td>
</tr>
<tr>
<td>Total Cumulative Cr.</td>
<td>108.8</td>
<td>31.8</td>
<td>722</td>
<td>115.9</td>
<td>19.3</td>
<td>121</td>
<td>2.42*</td>
<td>.001</td>
</tr>
<tr>
<td>Age</td>
<td>29.9</td>
<td>7.55</td>
<td>722</td>
<td>26.8</td>
<td>5.17</td>
<td>121</td>
<td>-5.38*</td>
<td>.001</td>
</tr>
</tbody>
</table>

Note. * $p < .001$.

Findings by Research Questions

Research Question 1

Is there a significant relationship between student participation in the JAA program and bachelor degree completion?

For RQ1 an independent sample $t$-test was performed to compare if there was a significant difference between participation in the JAA program and four-year degree completion. The $t$-test was calculated and reported in Table 5, JAA $t$-test Relationship to Degree Completion ($n = 843$). The results $t$-test analyses presented in Table 5, showed that students who...
participated in JAA \((n = 121)\) had a significantly higher four-year degree completion rate, \((t = -5.038, p = .001, d = .47 \text{ medium, } M = .70)\) than non-JAA participants \((M = .47)\).

**Table 5**

<table>
<thead>
<tr>
<th>Participation</th>
<th>Non-JAA</th>
<th></th>
<th>JAA</th>
<th></th>
<th>t</th>
<th>p</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>n</td>
<td>M</td>
<td>SD</td>
<td>n</td>
<td></td>
</tr>
<tr>
<td>Four-Year Degree</td>
<td>.47</td>
<td>.500</td>
<td>722</td>
<td>.70</td>
<td>.459</td>
<td>121</td>
<td>-5.04</td>
</tr>
<tr>
<td>Completion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.001</td>
</tr>
</tbody>
</table>

Note. Degree effect size Small = .1, Medium = .4, Large = .8; completion dummy coded 1 = complete 0 = non-complete

To explore the likelihood of degree completion in relationship to those who participated in the JAA and the subset of non-JAA students who transferred from the state community college only, a \(t\)-test test was performed. Table 6, JAA \(t\)-test Relationship to Degree Completion for State Community College Participants only \((n = 675)\) showed participation in JAA \((n = 121)\) had statistically significant higher four-year degree completion, \((t = 4.163, p = .001, d = .41 \text{ medium, } M = .70)\) compared to non-JAA \((M = .50)\) regardless of location of community college. JAA participants, hence, were still more likely to graduate with a four-year degree \((M = .70)\) than non-JAA participants \((M = .50)\) who only transferred from the state community college.

**Table 6**

<table>
<thead>
<tr>
<th>Participation</th>
<th>Non-JAA</th>
<th></th>
<th>JAA</th>
<th></th>
<th>t</th>
<th>p</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>n</td>
<td>M</td>
<td>SD</td>
<td>n</td>
<td></td>
</tr>
<tr>
<td>Four-Year Degree</td>
<td>.50</td>
<td>.500</td>
<td>554</td>
<td>.70</td>
<td>.459</td>
<td>121</td>
<td>4.16</td>
</tr>
<tr>
<td>Completion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.001</td>
</tr>
</tbody>
</table>

Note. Degree effect size Small = .1, Medium = .4, Large = .8; completion dummy coded 1 = complete 0 = non-complete
Research Question 2

Is there a significant difference in bachelor degree time to completion between JAA students and non-JAA transfer students?

For RQ2 an independent sample t-test was performed to compare if there was a significant difference between those who participated in the JAA program and those who did not, and time to four-year degree completion. The t-test was calculated and reported in Table 7, t-test of JAA and non-JAA Differences to Time to Degree Completion (n = 846). The results of the Levene test for equality variance was significant; therefore, equal variance not assumed is reported. The results revealed participation in JAA (t = 4.28, p = .001, d = .48 Medium, M = 2.12,) was statistically different from non-participants, (M = 2.45), to four-year degree completion. Moreover, with an (SD = .772) for non-JAA participant and a (SD = .584) of JAA participants, the time-to-degree completion for non-JAA had greater variance in completion time over JAA. On average, JAA students completed a four-year degree in 2.1 calendar years as compared to non-JAA students who completed on average in 2.5 calendar years. The analysis shows that participation in the JAA had a significant lower four-year time-to-degree completion.

Table 7

<table>
<thead>
<tr>
<th></th>
<th>Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>non-JAA</td>
</tr>
<tr>
<td></td>
<td>M</td>
</tr>
<tr>
<td>Four-Year Degree</td>
<td>2.45</td>
</tr>
<tr>
<td>Completion</td>
<td></td>
</tr>
</tbody>
</table>

Note. Degree effect size Small = .1, Medium = .4, Large = .8; completion dummy coded 1 = complete 0 = non-complete

To compare if there was a significant difference in time-to-degree completion between JAA (n = 121) and a subset of non-JAA (n = 554), which included only transfers from the state community college, an independent sample t-test was performed. The t-test was calculated and
reported in Table 8, $t$-test of JAA and non-JAA Differences for State Community College participant only to Time to Degree Completion ($n = 675$). The results the $t$-test revealed participation in JAA ($t = 4.03$, $p = .001$, $d = .52$ Medium/Large, $M = 2.12$) was statistically different from non-participants, ($M = 2.49$), to four-year degree completion. When accounting for transfers who came from the state community college, time to completion averages remained relatively the same. On average, JAA students completed a four-year degree in 2.1 calendar years as compared to non-JAA students who completed on average in 2.5 calendar years. The analysis shows that JAA participants had a significant lower four-year time-to-degree completion than non-JAA regardless if students transferred from the state community college or a community college out of the state system.

Table 8
$t$-test of JAA and non-JAA Differences for State Community College participant only to Time to Degree Completion ($n = 675$)

<table>
<thead>
<tr>
<th>Participation</th>
<th>non-JAA State CC only</th>
<th>JAA</th>
<th>$t$</th>
<th>$P$</th>
<th>$d$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
<td>$n$</td>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>Four-Year Degree Completion</td>
<td>2.49</td>
<td>.800</td>
<td>275</td>
<td>2.12</td>
<td>.584</td>
</tr>
</tbody>
</table>

*Note.* Degree effect size Small = .1, Medium = .4, Large = .8; completion dummy coded 1 = complete 0 = non-complete

**Research Question 3**

RQ3: To what extent and in what manner is variation in time-to-degree completion rates explained by four-year institution cumulative GPA, the total number of credits earned, degree type, Pell, and demographics for non-JAA and JAA?

One-way Analysis of Variance (ANOVA)s were conducted to compare the effectiveness of various demographics on time-to-degree completion with JAA status in the model. In Table 9, ANOVA Results for Demographics on Time to Degree Completion ($n = 426$) revealed no
significant differences in gender ($F = .132, p = .717$, Male $M = 2.37$, Female $M = 2.38$), ethnicity ($F = .322, p = .570$, White $M = 2.35$, non-White $M = 2.46$), degree type ($F = .131, p = .718$, BA $M = 2.38$, BS $M = 2.37$), and Pell ($F = 2.58, p = .109$, Yes $M = 2.27$, No $M = 2.47$) eligibility on time-to-degree completion.

Table 9

<table>
<thead>
<tr>
<th>Fixed Factors</th>
<th>$n$</th>
<th>$M$</th>
<th>$F$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>201</td>
<td>2.37</td>
<td>.132</td>
<td>.717</td>
</tr>
<tr>
<td>Female</td>
<td>226</td>
<td>2.38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>319</td>
<td>2.35</td>
<td>.322</td>
<td>.570</td>
</tr>
<tr>
<td>Non-White</td>
<td>107</td>
<td>2.46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degree type</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BA</td>
<td>176</td>
<td>2.38</td>
<td>.131</td>
<td>.718</td>
</tr>
<tr>
<td>BS</td>
<td>250</td>
<td>2.37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pell</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YES</td>
<td>180</td>
<td>2.27</td>
<td>2.58</td>
<td>.109</td>
</tr>
<tr>
<td>NO</td>
<td>246</td>
<td>2.47</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. JAA completers $n = 85$, Non JAA completer $n = 341$

Table 10, Stepwise Regression of Time to Degree Completion ($n = 426$), contains the stepwise multiple regression for cumulative GPA, the total number of transfer credits, JAA status, and Pell status on time to degree completion for completers. Examination of the table reveals the following: GPA was entered first into the regression model and explained 5% of the variance ($r^2 = .05, p < .001$, small/medium effect size). After the total number of transfer credits were entered into the regression equation, the variance was incremented by 3% with a combination ($r^2 = .08, p < .001$) associated with a medium effect size. When JAA status was entered into the regression, the combination of JAA with GPA and total number of transfer credits explained 10% of the variance ($r^2 = .10, p = .001$, medium effect size). Finally, when Pell
grant usage was added to the regression model, the variance increased by 2% ($r^2 = .12, p = .001$, medium effect size).

Table 10

Stepwise Regression Time to Degree Completion, ($n = 426$)

<table>
<thead>
<tr>
<th>Variables</th>
<th>$R$</th>
<th>$r^2$</th>
<th>Beta</th>
<th>$t$</th>
<th>$p$</th>
<th>$\eta^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumulative GPA</td>
<td>.237</td>
<td>.05</td>
<td>-.326</td>
<td>-4.36</td>
<td>&lt;.001</td>
<td>Sm/med</td>
</tr>
<tr>
<td>Total # of Transfer Cr.</td>
<td>.283</td>
<td>.08</td>
<td>-.016</td>
<td>-3.4</td>
<td>&lt;.001</td>
<td>med</td>
</tr>
<tr>
<td>JAA Status</td>
<td>.322</td>
<td>.10</td>
<td>-.288</td>
<td>-3.34</td>
<td>.001</td>
<td>med</td>
</tr>
<tr>
<td>Pell</td>
<td>.354</td>
<td>.12</td>
<td>.244</td>
<td>3.23</td>
<td>.001</td>
<td>med</td>
</tr>
</tbody>
</table>

*Note. Completers = 426, Degree effect size Small = .01, Medium = .09, Large = .25*
Major Findings

The major finding of this study included:

- There is a significant positive difference between participation in the JAA program \((M = .70)\) than non-JAA \((M = .47)\) and four-year degree completion \((t = 5.04, p = .001)\).

- Two-thirds of JAA students (70%) completed a four-year degree compared to less than half (47%) of non-JAA students.

- There is a significant positive difference between participation in the JAA program \((M = .70)\) than non-JAA \((M = .50)\) and four-year degree completion with in the state transfer system from community college to flagship university \((t = 4.16, p = .001)\).

- There is a significant positive relationship between participation in the JAA program \((M = 2.12)\) than non JAA \((M = 2.45)\) and time-to-degree completion \((t = 4.28, p < .001, d = .48)\).

- There is a significant positive relationship between participation in the JAA program \((M = 2.12)\) than non JAA \((M = 2.49)\) and time-to-degree completion with in the state transfer system from community college to flagship university \((t = 4.03, p < .001, d = .52)\).

- Non-JAA students take on average of a third of a year longer to complete a four-year degree than JAA participants, (non-JAA \(M = 2.45\), JAA \(M =2.12\)).

- Cumulative GPA can explain for 5% of the variance in time to completion \((R^2 = .05, p < .001, \text{small/medium effect size})\).

- Demographic such as age, gender, and degree type did not play a role in time to degree completion.
Supplemental Findings

- Out of 675 state community college transfer students, only 121 participated in the JAA program.
- Ethnicity and gender demographics were consistent across all groups, Pre-JAA, JAA, and non-JAA and results showed no relationship between gender and ethnicity on both completion and time-to-degree.
- The findings also showed that JAA students completed 11.9 credits on average each semester which is just shy of full time 12 credits. This was 1 credit hour more on average than non-JAA.
- GPA appears to be significant, JAA students on average, earned a letter grade higher (3.1) than non-JAA students (2.5).

Summary

The purpose of this study was to determine if there was a relationship between participation in a joint admissions program and four-year degree completion. This chapter presented ex-post facto data collected in two samples, Pre-JAA ($n = 214$) and Post JAA ($n = 846$), where JAA participation was ($n = 121$). In summary, the three research questions attempted to examine JAA participation on four-year degree completion and time-to-degree completion. The first two research questions investigated transfer students with an associate’s degree who enrolled at a flagship state institution and compared degree completion and time-to-degree completion rates. The final research question looked at the two comparison groups of JAA and non-JAA and researched to see if there were any differences in gender, ethnicity, Pell
status, degree type earned, and total number of transfer credits to time to completion of a four-year degree.

The key finding of this research revealed students who participated in the JAA were more likely to earn more credits, finish their four-year degree in one fewer semester, and complete the degree at a higher rate than non-JAA students. Additionally, they were more likely to have a higher cumulative GPA by nearly half of a letter grade. In summary, these findings show participation in the JAA program was more predictive of persistence to degree completion and time-to-degree completion compared with those students who did not participate in the JAA program. Chapter 5 will place these findings into context by providing a summary of the research study and interpretation of the findings, conclusions drawn from the study, and recommendations for practice, policy, and future research.
V. SUMMARY, RECOMMENDATIONS, AND CONCLUSIONS

Introduction

This chapter presents an overview of the significant findings of the study and a comparison of those discoveries with the background of literature. Results of the study are examined, along with recommendations for future research. The significance of the study and its contribution to the research literature will be discussed. Lastly, based on the findings, recommendations for higher education system leaders and higher education institutions, particularly community colleges and four-year receiving institutions, are offered regarding the impact of joint admission programs and four-year degree completion.

The Complete College America initiative signaled a paradigm shift from a focus on access to higher education to a focus on public policy defining success as completion, graduation, and transfer rates (Complete College America, 2011). Currently, community colleges enroll about half of all undergraduates in higher education, accounting for over seven million students annually (Juszkiewicz, 2016). Despite policy and institutional efforts, community colleges are falling short of reaching their two-year to four-year college completion goals (Monaghan & Attewell, 2015).

The review of literature consistently showed the vertical transfer from community colleges to four-year institutions offers open-access for upward mobility for many students including low-income, first-generation, and ethnic minority (Bailey et al., 2015). Research on the influence of state policies, specifically program articulations and the influence of associate degree attainment on degree completion is mixed (Jenkins & Fink, 2016; Monaghan & Attewell, 2015, Xu et al., 2017). Over the last decade, attention on transfer students and their role in the college completion agenda has become a focus of higher education research (Bailey et al., 2015;...
Significant studies have focused on the student experience of transfer with less attention on the relationship of institutional structures, policies, and specific practices that promote four-year degree completion (Bailey et al., 2015). More specifically, there is little research exploring joint admission programs and their relationship to persistence to the bachelor's degree attainment and time-to-degree completion.

This causal-comparative ex-post facto study sought to fill the gap in the literature that addressed the relationship between participation in a state joint admission program and four-year degree completion. Additionally, this study examined the relationship between participation in a joint admissions program and time-to four-year degree completion. The following research questions guided this study:

RQ1: Is there a significant relationship between student participation in the JAA program and bachelor degree completion?

RQ2: Is there a significant difference in bachelor degree time to completion between JAA students and non-JAA transfer students?

RQ3: To what extent and in what manner is variation in time-to-degree completion rates explained by four-year institution cumulative GPA, the total number of credits earned, degree type, Pell, and demographics for non-JAA, and JAA?

The study sample consisted of two groups. Sample one was Pre-JAA (n = 214) students who graduated from a community college with an associate’s degree and transferred to a four-year flagship state institution in the fall semester of either 1996 or 1997 and served as observational data for this study. Sample two was post-JAA (n = 846) students who graduated from a community college with an associate’s degree and transferred to a four-year flagship state institution between the fall of 2011 and the fall of 2015. There were two subsets of sample two:
CAUSAL-COMPARATIVE JAA AND NON-JAA

JAA participating students \((n = 121)\) and non-JAA students who transferred from the state community college \((n = 675)\).

**Summary of Major Findings**

The underpinning of this research study is college completion and time-to-degree. What are the differences in college completion rates between two groups of transfer students continuing their educational pathways after completing an associate’s degree? And does an established pathway of joint admission lead to positive student outcomes in time-to-completion rate? These questions are essential given the number of institutional resources and human capital that are expended in developing initiatives to increase transfer student's four-year degree completion rates. Additionally, research exploring JAA pathway degree completion may provide insight on closing the gap of transfer student’s success of four-year degree completion.

As discussed in Chapter 4, **the first significant finding of this research showed students who participated in JAA were more likely to attain a four-year degree than non-JAA participants.** When examining only participants who transferred from the state community college, there also appears to be a significant relationship between JAA status and four-year degree completion regardless of the location of community college. Since JAA students must complete an associate’s degree in a guided pathway, with a mapped articulation before transferring to the four-year flagship state institution, the pathway may account for the higher completion rate. The National Student Clearinghouse Research Center (2012) report stated among all transfers from the community college to four-year institutions, 60 percent earned a Bachelor’s degree within four-years of transfer, and it increases to 71 percent within the subset of those who had an earned associate’s degree before transfer (Hossler et al., 2012). For JAA students 70 percent earned the bachelor’s degree in 2.1 years from transfer. As stated in the
literature, Kopko and Crosta, (2016) found that students who completed an associate’s degree at a community college were more likely to transfer and to persist to four-year degree completion. Furthermore, the discoveries from research question one are supported by new research from Jenkins and Fink (2016) which showed when articulations are mapped to guided academic pathways there is a positive relationship to four-year degree completion.

The second significant finding of this research showed transfer students who participated in the JAA program and completed their four-year degree finished in less time than non-JAA students. When accounting for transfers who came from the state community college only, time-to-completion averages remained relatively the same. On average, JAA students completed a four-year degree in 2.1 calendar years as compared to non-JAA students who completed on average in 2.5 calendar years. The analysis shows participation in the JAA appears to have had a significant positive difference on four-year time-to-degree completion despite if students transferred from the in-state or an out-of-state community college.

The Complete College America Report (2011) suggests state systems should reduce time-to-degree. Two of the three policies directly related to time suggest transfer policies should control for credit creep and create clear academic maps (Complete College America, 2011). As a mapped pathway program, the JAA could be an influence in minimizing credit loss and credit creep. The average number of credits transferred by a JAA participant was \( M = 60 \) with an \( SD = 3.38 \), showing little variance in applied credits earned. Time Is the Enemy found students receiving associate’s degrees earned on average 89 credits when typically, only 60 credits would transfer to a four-year institution (Complete College America, 2011). In observation of Pre-JAA sample, the average number of transfer credits was \( M = 73.1 \), resulting on average with over 13
excess transfer credits not applicable to their four-year degree program. Participation in the JAA has closed the gap on unused and excess credits from the transfer process.

In contrast to non-JAA students, JAA students enter the four-year flagship institution from a specific JAA pathway program prescribed for the first two years and advised through both the community college and flagship institution. By controlling for credit creep, the JAA pathway may account for the on average of 60 transfer credits of JAA students and hence impact their time-to-degree completion. Further research to explore this if a relationship exists is needed. In summary, these findings tell us that declaring a JAA pathway was more predictive of completion and shorter time-to-degree attainment than not declaring a pathway. These findings are consistent with the current research of the Center for Transfer Students at Columbia University (Jenkins & Fink, 2016; Xu et al., 2017).

In examining the relationship of completing a Bachelors of Arts degree or a Bachelor's of Science degree in both JAA and non-JAA degree completers, no statistically significant differences were found in time-to-degree completion. This finding supports Jenkins and Fink (2016) who found type of degree earned had shown no link to the probability of completing a bachelor's degree. Additionally, findings from this study showed no significant difference in gender, ethnicity, and Pell eligibility on time-to-degree completion. Further research is needed to explain how these demographics impact time-to-degree completion.

When investigating the average number of units taken per semester, this study showed that JAA participants completed 11.9 credits per semester on average in comparison to non-JAA students who earned 10.9 credits on average. This finding may be instrumental to the financial cost to the student. Gonzalez Canche (2014) found, despite the fact that two-year students can save money during the early years of college, after that, they might be more likely to require a
longer time to graduate, requiring excess loan debt. According to the JAA policy, students who earned a 3.3 or higher cumulative GPA at the state community college are eligible for a tuition discount at the state flagship institution. Since JAA participants complete a semester sooner, take on average one credit more per semester, and may have received a tuition discount, it may be more likely they are graduating with less financial debt. Further research is needed to explore the financial obligations of JAA and non-JAA on time–to-degree completion.

The third significant finding of this research showed JAA (3.08) participants earned a higher cumulative GPA than non-JAA (2.55) participants and Pre-JAA (2.91). JAA participants earned on average .53 difference in GPA over non-JAA. This finding may be attributed to lower levels of transfer shock in JAA students verses non-JAA students. Transfer shock is a temporary dip in grade point average (GPA) that is often experienced by two-year transfer students in their first and/or second semester at four-year institutions (Hills, 1960). Since part of the JAA program is a joint admission between two institutions, JAA students have the opportunity to become more acclimated to the four-year state institutions culture earlier in the transfer process. Townsend and Wilson (2006) speculated, “with the drop in GPA, transfer shock may be partly or almost totally a manifestation of the shock experienced in moving from one institutional culture to another” (p. 25). Additionally, JAA students receive dual-advisement from both the sending institution and receiving institution. In other words, non-JAA transfer students may have more difficulty integrating into the four-year flagship institution due to their lack of established connections. Further research is needed to explore the influence of advising on transfer student success.

It is possible that students who participate in the JAA program have higher academic achievements and hence may account for a self-selection phenomenon in JAA participation.
Future research exploring the relationship between the community college GPA and four-year degree completion may help explain characteristics of JAA students and their selection to participate. Further qualitative research may help to explore the significant differences in cumulative GPA between JAA and non-JAA students.

**Summary**

The findings and methodology of this study add an important contribution to the research literature by providing a quantitative analysis of four-year degree completion and time-to-degree completion of a joint admissions program within a small New England State. The outcomes of this study are significant to stakeholders of the public higher education system in a small New England state. The results of this study provide practical implications for students and parents looking to choose alternate pathways for completing a four-year degree. Additionally, the findings serve to facilitate future discussion on the role of a student transfer, specifically joint admissions programs, in public higher education among policymakers and higher education leaders.

Several strengths of the methodology and findings of this study were identified. The methodology and findings of this study examined a 5-year period (2011-2015). The reliability of the findings from the study was enhanced due to its design and use of longitudinal ex-post facto data collected through the flagship student records system. Participants include only transfers with an associate's degree from a community college who transferred to the flagship institution. Hence, the results of the study can be applied to other states looking to gain a better understanding of how a joint admission policy can impact student success within the confines of a statewide system of public higher education. Time-to-degree completion was calculated by the difference between the term in which graduation occurred and the first term of attendance at the
four-year institution. Enrollment continuity (Kopko & Crosta, 2016), and enrollment stop-outs (Monaghan & Attewell, 2015) were not considered in the measurement of time-to-degree. Future research should examine developing a time-to-degree measurement which recognizes the wide-range of patterns of student attendance.

**Recommendations for Policy and Practice**

Wyner (2014) states, “While access has expanded over the years, outcomes for students have not necessarily improved” (p.1). There is the need to develop and foster four-year institution partnerships with community colleges to provide the pathways for transfer students to achieve their postsecondary goals. Based on the findings and conclusions drawn from this study, the following recommendations for practice and policy have been developed for community colleges, four-year institutions, and policymakers.

**Recommendations #1: Promote JAA program more aggressively.**

Over a five-year period, only 121 students transferred from the community college to the flagship institution under the JAA program. Of those students 70 percent completed and on average they finished in 2.1 years as compared to non-JAA who completed in 2.5 years. Additionally, they graduated on average with a .5 higher GPA than non-JAA. This study suggests that the JAA program is successful in increasing transfer four-year degree attainment and should be promoted to increase student's participation. Promotion should include all stakeholders: community colleges, four-year flagship institution, and system leaders. Future research on why participation is low and how to increase participation may help in the promotion of the program. **Recommendation #2: Enhance program pathways and expand JAA programs between the community college and four-year flagship institution.**
JAA students entered the four-year flagship institution from a specific JAA pathway program prescribed for the first two years. JAA programs do not exist for all majors, and the JAA requires students to complete the Associate’s degree in General Studies prior to transfer. For Applied Sciences and other programs such as Pre-Med, the current JAA structure does not allow a clear pathway hence, it is more likely the students would transfer prior to Associate’s degree completion.

JAA students transferred on average 60 credits and graduated on average one semester earlier. Participation in the JAA pathway may have influenced JAA time-to-degree completion by controlling for credit creep. As outlined in the review of literature, community college culture is a preferred option towards baccalaureate degrees for some students who are first-generation, non-traditional or underrepresented. However, the sample size of JAA ($n = 121$) did not mirror the demographics of non-traditional or underrepresented. Exploration of number of students enrolled in JAA and yield of those students to associate’s degree is needed to clarify demographic participation and completion. Moreover, further exploration of pathway programs may increase persistence in the JAA program and four-year degree attainment. This study supports recent research from the Columbia University Teacher College Community College Research Center on the clarification and streamlining of major pathways to assist students in achieving their postsecondary goals.

**Recommendation #3: Position resources behind tracking transfer completion rates**

It is recommended to repeat this study and publish the findings on a regular basis. A collection of longitudinal data of completion and time-to-degree beyond 2015 will assist leadership in assessing current practice and creating new policy and initiative aimed at improving transfer student completion rates and time-to-degree completion for public higher
education in this small New England state. With a paradigm shift from counting only first-time, first year cohort data to now counting all graduates, higher education leaders should place more attention on transfer completion rates. Evidence-based data such as this study will be necessary to leadership specifically in public higher education where performance-based funding models are on the rise. Transfer rates, transfer four-year degree completion, and time-to-completion will be metrics used is the allocation of future resources and will demand higher attention.

**Recommendation #4: Explore the effectiveness of dual advisors in the JAA program and the advisor’s influence on transfer success.**

It is recommended further exploration of the role of advisors in the JAA and their influence on persistence to degree completion. The JAA is designed so each student has advisors from both the community college and four-year institution. Exploration of how many students sign up for JAA and how many complete JAA may be influenced by advising. In a case study conducted by Tobolowsky and Cox (2012), their findings suggest advisors “face many obstacles when trying to facilitate the success of their transfer students” (p. 405). Among those identified was a lack of institutional priority toward transfer student success. In contrast, Fann (2013) found advisors, despite the challenges, are willing to be innovative and take risk. “They do not shy away from doing whatever it takes to ensure that their students succeed in achieving their dream of completing a college degree” (p. .48). These counterintuitive findings reflect the perplexing challenges institutions face and in particular the organizational structure when working with transfer students. Further exploration on how advising of the JAA program influences participation, persistence, and degree completion may provide an insight into the relationship between advisors and JAA student success.
Recommendation #5: Explore the economic impact of transfer students and time-to-completion.

Cost of higher education is at the forefront of most students and parents today. Longer time-to-degree completion and a greater number of transfer credits invalidate the assumption that lower tuition rates at the community college provide students financial relief in completing the four-year degree. Further investigation should be performed on the economics of community college transfer function in completing a four-year degree. Additionally, further research should explore if there exists a relationship between the JAA policy regarding tuition discount and four-year degree completion.

Recommendation #6: Encourage legislation to invest in Joint Admissions

Although higher education administrators express the desire to assist the transfer student population, difficulties with, political, and financial issues tend to impede change. The transfer process is complex. Fann (2013) discovered that institutional mission, leadership and culture played key role in understanding policies that ultimately affected transfer student success at four-year institutions. This study showed that students who participated in the JAA were more likely to finish their four-year degree in one fewer semester, complete the degree at a higher rate than non-JAA students, and do so while excelling with a higher GPA. The JAA program has enhance the states completion goals. Financial investment, expansion, and greater commitment may lead to higher bachelor degree attainment.

Opportunities for Future Research

- Expand the existing study to include all three state institutions and limit the participants to only students who move among those three institutions. (QN)
• Explore student, faculty, advisors, admissions personnel and administrator’s perceptions and expectation of the JAA program (QL), through a dominant qualitative approach.

• Examine the organizational structures of the state higher education institutions as it relates to the process, policies, and practices that influence transfer student success (MM).

• Explore JAA and non-JAA perceptions on academic success and evaluate what themes may impact their persistence to four-year degree completion (QL).

• Explore why JAA non-completers were unsuccessful in attaining their four-year degree (QL), through a dedicated qualitative approach.

• Investigate the role of the JAA scholarship subsidy on the economics of community college function to four-year degree completion (MM).

• Examine how specific pathways impact four-year degree completion and time-to-degree (MM).

Conclusions

Approximately 80 percent of students attending community college intend to earn a bachelor’s degree; however, only 17 percent attain the goal (Horn & Skomsvold, 2011). The Complete College America (2011) initiative signaled a paradigm shift from access to higher education to public policy defining success as completion, graduation, and transfer. Despite efforts made, community colleges are falling short of reaching their two-year to four-year college completion goals (Monaghan & Attewell, 2015). Attention to transfer students and their role in the college completion agenda has become a focus of recent research. This non-experimental causal-comparative ex-post facto study sought to fill a gap in the literature that addresses the relationship between a Joint Admission Agreement (JAA) program and two-year to four-year degree completion and time-to-degree completion. Specifically, the purpose of this study was to
investigate the relationship between JAA transfer participation and degree attainment and time-to-degree completion in a small New England state.

The three research questions attempted to examine the impact of JAA participation on four-year degree completion and time-to-degree completion. The first two research questions looked at transfer students with an associate’s degree who enrolled at a flagship state institution and compared degree completion and time-to-degree completion rates. The final research question looked at the two comparison groups of JAA and non-JAA and examined to see if there were any differences in gender, ethnicity, JAA status, Pell status, degree type earned, and the total number of transfer credits to time-to-completion of a four-year degree. The key finding of this research showed students who participated in the JAA were more likely to earn more credits, finish their four-year degree in one fewer semester, and complete the degree at a higher rate than non-JAA students. Additionally, they were more likely to have a higher cumulative GPA by nearly half of a letter grade. GPA, the total number of credits transferred, and participation in the JAA program were collectively predictors of time-to-degree completion. In summary, these findings show that participation in the JAA program was more predictive of persistence to degree completion and time-to-degree completion compared with those students who did not participate in the JAA program.

Based on the findings, recommendations for policy, practice, and future studies were offered. Transfer to four-year institutions is only one component of a community college mission, however, this study shows intentional policy such as the JAA with prescribed pathways, have a greater chance for successful student outcomes. Four-year degree completion of transfer students is a complex process and as the review of literature shows, focused attention on improving college outcomes is relatively new. Furthermore, focused attention on transfer four-
year degree attainment is even more of a recent phenomenon. This study revealed that the JAA is a successful guided pathway model and could provide the framework to align promising reform strategies. This study adds to the growing body of recent literature showing evidence-based data with the hope to persuade college leaders and policymakers to make investments in implementing guided pathway reform.
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