ADDRESSING SUMMER MELT: THE EFFECTIVENESS OF A SUMMER BRIDGE PROGRAM IN IMPROVING COLLEGE ATTENDANCE RATES FOR AT-RISK HIGH SCHOOL GRADUATES

A Dissertation Presented to the Faculty of the College of Education

University of Houston

In Partial Fulfillment of the Requirements for the Degree

Doctor of Education

by

Jennifer Pettersson Cobb

May 2014

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Abstract

In July 2013, National Public Radio (NPR) showcased a research study on why economically disadvantaged students "melted" during the summer between their high school graduation and fall enrollment in an institute of higher education (IHE). Summer melt has been defined as graduated high school students who intend and apply to go to college in the fall after graduation but end up not enrolling. The study found that up to 40% of economically disadvantaged students who planned to attend a community college never enrolled. The phenomenon of summer melt is not a new one, but with more economically disadvantaged students enrolling in higher education, it has become more apparent. The concern of summer melt is multifaceted. High schools are now holding themselves more responsible for how successfully they launch their graduates. IHEs are concerned that students who commit to their institutions become no-shows, which creates a ripple effect that on waiting lists and financial aid.

Summer melt appears to be a relatively new area of study in educational research. The attempts to address the phenomenon come from K–12 school districts, IHEs, college-access organizations and other nonprofit organizations. One method of addressing summer melt is summer bridge programs. Summer bridge programs are created to help improve college readiness and ease the transition into college. In the past, they were mainly created by IHEs with the intention of assisting students who had probationary acceptance. With attention appearing to shift now to college completion,

the connection of summer melt to summer bridge programs as a possible intervention is timely and useful, especially for economically disadvantaged students.

This research study examined the impact of a summer bridge program in reducing the summer melt rate for two Title I high schools in Houston, Texas. The definition of summer melt for the purpose of this study has been broadened to include students who intend, at the time of high school graduation, to enroll in an IHE in the fall. The reason for the expansion of this definition is that most students this intervention addresses historically do not enroll in the local community college until the summer after graduation. Based on previous research conducted in this specific district, approximately 50% of students from these two high schools who intend to enroll in the local community college do not attend in the fall. The majority of students attending these high schools are economically disadvantaged, Hispanic, and first-generation college students. These variables will be discussed as possible factors influencing the high summer melt rates.

A summer bridge program was created by the independent school district in partnership with the local community college in order to address summer melt. The impact of this program in addressing summer melt was assessed by the fall enrollment rate of students in the local community college. Summer bridge students were compared to students from the same high schools who did not attend the summer bridge program. All students included in the analysis had stated in a senior graduation survey that they planned to attend the local community college.

Results indicated that the summer bridge program positively impacted students who are Hispanic and economically disadvantaged and this impact is statistically significant. The intentionality of services and planning required for a bridge program to

be successful was apparent throughout the planning and execution of the program. The detailed description of the program as it relates to these components and set up of the program provides a valuable framework for other institutions to establish a similar bridge program.

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Chapter 1

Introduction

In July 2013, National Public Radio (NPR) showcased a research study on why economically disadvantaged students "melted" during the summer between their high school graduation and fall enrollment in an institute of higher education (IHE). According to Castleman and Page (2014), “summer melt” pertains to high school graduates who intend to go to college in the fall after graduation but end up **not** enrolling; that up to 40% of economically disadvantaged students who planned to attend a community college never enroll, instead becoming a part of the summer melt. The phenomenon of summer melt is not a new one, but with more economically disadvantaged students enrolling in higher education, it has become more apparent. The concerns over summer melt are increasing and multifaceted. High schools are now holding themselves more responsible for how successfully they launch their graduates. .IHEs, on their part, are concerned that students who commit to their institutions become no-shows and the subsequent ripple effect that decision has on waiting lists and financial aid packages. Consequently, the summer time frame between high school graduation in the late spring and college enrollment in the early fall is a critical period, especially for students who are economically disadvantaged.

The summer after high school graduation is a largely unexplored stage in the college access pipeline for underrepresented students (Castleman, Arnold, & Wartman, 2012). Attempts to address the phenomenon of summer melt come from K–12 school districts, IHEs, college-access organizations, and other nonprofit organizations. Efforts include providing summer counseling, assistance with financial aid completion, text

messaging, and near peer tutoring. Another method of addressing summer melt is summer bridge programs. Summer bridge programs are created to help improve college readiness and ease the transition into college. In the past, they were mainly created by IHEs with the intention of assisting students who had probationary acceptance. With attention appearing to shift now from college access and college readiness to college completion, the connection between research on summer melt and research on the effectiveness of summer bridge programs as a possible intervention is timely and useful. This is especially true for economically disadvantaged students who have double the melt rate compared to the overall rate for all students, 40% compared to 20% (Castleman & Page, 2012).

This research project examined the impact of a summer bridge program on reducing the summer melt rate for two Title I high schools in a school district in Houston, Texas. Based on previous research conducted in this specific district, approximately 50% of students from these two high schools who intend to enroll in a local community college do not attend in the fall. The majority of students who attended these high schools were economically disadvantaged, Hispanic, and first-generation college students (Cobb, 2013). These variables were discussed as possible factors influencing the high summer melt rates.

A summer bridge program was created by a school district in partnership with the local community college in order to address summer melt. The impact of the program on addressing summer melt was measured by the fall enrollment rate of students in the local community college. Specifically, the list of students enrolled in the summer bridge program was compared with outcomes for students from the same high schools who did

not attend the summer bridge program. The intention of attending a local community college was measured by students' stated intentions on a senior graduation survey. The hypothesis for this research study was that the students attending the summer bridge program had a significantly better enrollment in the local community college in the fall.

Chapter 2

Literature Review

The subject of college attendance includes many areas of research from college preparedness to college completion. Every step of a student's path has to be successfully accomplished for the next step to fall into place. The literature review for this research examined if a summer bridge program can serve as an intervention to decrease summer melt and improve student achievement. Research related to variables that can be associated with summer melt—time of entry to higher education, type of IHE, being from an underrepresented population, lack of knowledge regarding the logistics of college, financial aid, and college readiness—are presented below.

College Entrance

Time of Entry to Higher Education

Attendance in an IHE immediately after high school graduation is an important indicator of how successful students will be in completing a higher education experience with a degree. Adelman (2004) found that nearly 80% of students enroll in some form of higher education within 8 years of high school graduation; however, students who go immediately after high school have better persistence rates and a greater likelihood of earning a degree. Niu and Tienda (2013) found that students who postponed college enrollment were more likely to be less college ready, have a lower socioeconomic status, and a greater likelihood of initially enrolling in a two-year institution. Radford, Berkner, Wheeless, and Shepherd (2010) reported that among community college students, those who attended community college directly after high school had a higher graduation rate from a community college after 6 years compared to those who delayed entry.

Research from the Consortium on Chicago Schools Research found that 83% of Chicago public school students aspired to complete a four-year degree. However, only 59% actually applied to a four-year institution, and just 41% had actually enrolled in a four-year institution in the fall following graduation. Latino students, 60%, were the least likely to plan to apply to a four-year college, compared to 65% of African Americans and 76% of Whites (Roderick, Nagaoka, & Coca, 2008). Avery and Kane (2004) found similar results with one sample of seniors from Boston public schools who planned to attend a four-year college—only slightly more than half had applied compared to 91% from suburban sample.

Underrepresented Populations

From research that evaluates larger groups and their college-going rates to research that focuses on gaps in college-going and underrepresented populations, the research clearly paints a profile of a student who is most likely **not** to attend college directly after high school. These students most likely come from low-income, minority families and are considered first-generation college students (Radford & Tassoff, 2009; Radford et al., 2010). Long (2007) found that among students from low-income families, only 43% entered a postsecondary institution directly after high school graduation compared to 75% of students from higher income families. Among low-income families, it was found that top-quartile performing students from low-income families attend college at the same rate as bottom-quartile performing students from high-income families (Advisory Committee on Student Financial Assistance, 2001). Students from low-income minority families can perform at superior academic levels but are far less likely to attend college than their high-income peers. While income level is important,

family support can also be a contributing factor to college success. Approximately 27% of all graduating high school seniors are prospective first-generation college students. First-generation students often have to deal with demands from their families and are often discouraged from attending college. These students can also lack guidance and support from their parents when compared to potential support levels available from parents who completed college. Even when families of first-generation students are supportive, they still may lack experience in how to help navigate the college system (Hayes, 1999). First generation students have also been found more likely to pursue certificate program or an associate's degrees and less likely to pursue a bachelor's degree (Ishitani, 2005; McCarron & Inkelas, 2006).

Many more students graduate from high school each spring than enroll in college the following fall. Many more students graduate from high school and intend to enroll in college than actually enroll in college the following fall. The summer melt phenomenon is substantial, and exploring the variables that impact the phenomenon is essential to understanding interventions that may be successful. Since college attendance directly after high school is an important predictor of college completion, what variables appear to be getting in the way of students' success and contributing to summer melt? Research shows that students who qualified for college but did not attend immediately most often were hindered by college costs, availability of financial aid, uncertainty in how to enroll in college, and inadequate preparation (Hahn & Price, 2008; Long, 2007). The following sections will discuss research that explored how these barriers have contributed to the summer melt phenomenon.

College Costs and Financial Aid

The literature commonly discusses the rising costs of college and the impact this has on students attending college. According to the National Center for Education Statistics (2012), the costs of undergraduate tuition, room, and board for the 2010–11 academic years were estimated to be $13,600 at public institutions, $36,300 at private not-for-profit institutions, and $23,500 at private for-profit institutions. This reflects a 42% increase for public institutions and a 31% increase for private institutions after adjusting for inflation over the past 10 years. College costs are increasingly a barrier as college tuition rates continue to increase annually at a rate that exceeds the average annual household income. According to Cooper (2012), the College Board reported that tuition and fees, after taking into account national cost of living inflation, have risen annually for the past decade, on average 2.4% per year at private 4-year colleges, 4.2% per year at public 4-year colleges, and 1.4% per year at public 2-year colleges.

Within college costs, research also indicates a lack of understanding of college expenses is another problem. Studies have shown that parents and students tend to overestimate the cost of college by two-fold or more (Avery & Kane, 2004; Ikenberry & Hartle, 1998; Post, 1990). The prediction of college costs tends to be more accurate the more affluent the family and the more educated the parents (Horn, Chen, & Chapman, 2003). In other words, the more in need students are for money for college, the less likely they or their parents are to know how much it actually costs.

Access to financial aid is also another barrier related to college costs. The literature also clearly states that knowledge is power when understanding financial aid. A survey for Sallie Mae by Perna (2004) found that 75% of respondents said that they

would have been more likely to enroll in college if they had received better financial information. Also, two-thirds of their parents said they received no financial aid information when their child was in high school. The survey results indicated specifically that parents who do not speak English (those whose children may need the greatest level of support in this area) were the least likely to understand financial aid. Ekstrom (1991) found that awareness of financial aid and knowledge of college costs increased the likelihood of students enrolling in college, choosing a four-year rather than a two-year school, and attending full-time rather than part-time. Each of these variables has been related to successful completion of bachelor's degrees.

Lack of Knowledge

The lack of knowledge of how to navigate the college admission and enrollment process also appears to be a great determinant for whether or not students go to college. The *Congressional Digest* (2009) found that when examining the capabilities of children, many lower income students should be able to access many of the same institutions as do higher income students, but they do not because of a lack of knowledge of how to find their way through the system. Hooker and Brand (2010) found that college knowledge and the development of a college-going identity can help create relevancy in high school, keep students engaged, and ensure that students prepare and enroll in a postsecondary education. They also found that low-income, first-generation, college-going students have the most challenges related to applying and enrolling in college. As a result, the students with academic capacity for success who need the most help tend to lack an understanding of how to navigate the postsecondary system, role models, and assistance in the education community/schools.

Additionally, while parents of minority students are found to be supportive of their children's educational goals, many cannot give specific advice about college and rely heavily on the education community/schools for that information (Wimberly & Noeth, 2004). Research has also found that a significant lack of information exists for all prospective college attendees and not just minority or poor students (Horn, Chen, & Chapman, 2003). In sum, information about college, accessing financial support, and accessing enrollment information are key for all students' future success—mainstays of the success of low-income, minority, and first-generation students. These elements are often termed a "college-going culture."

The Consortium on Chicago School Research found that attending a high school with a strong college-going culture was the most consistent predictor of whether students took the steps required for college enrollment. This included receiving information and assistance in the college application process, especially for Latino students who are often first-generation college students (Roderick, Nagaoka, & Coca, 2008). Hooker and Brand (2010) reported that knowledge of the college application process includes practical knowledge of how to plan and enroll in college. It also requires experience such as being exposed to college-level work, understanding a college campus, and understanding the expectations of college. Other academic skills are also important to learn, such as study skills, good study habits, and self-monitoring.

College Readiness

College readiness is about academic capacity—can students demonstrate that they possess the skills necessary to move successfully to the next rung of the education ladder? Utilizing National Center for Educational Statistics (NCES) data, National

Assessment for Educational Process (NAEP) data, and Common Core Data (CCD) from the Class of 1998, Greene and Forster (2003) found that 70% of students graduated from high school. Of those who graduate, only 32% were considered college ready. When examining ethnicity, they found that only 51% of all African American students and 52% of all Hispanic students graduated from high school. Of those students who graduated from high school, only 20% and 16%, respectively, were considered college ready. In comparison, 72% of White students graduated from high school and 37% were considered college ready. Figure 1 illustrates the discrepancy between high school graduate and college ready.

Figure 1. Graduated from High School Compared to College Ready

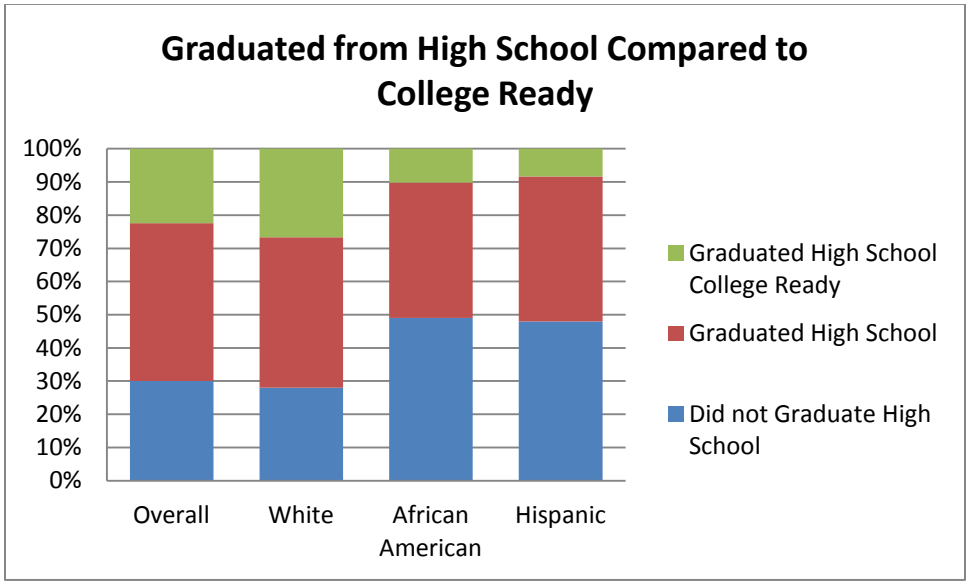


*Figure 1.*A representation of the portion of those who are considered college ready among high school graduates by ethnicity. Source: Greene and Forester (1998).

When examining ACT data, ACT reported only 25% of students who took the test met the ACT College Readiness Benchmark in all four subjects (English, mathematics, reading, and science). Among African Americans and Hispanics, only 4% and 11%,

respectively, met these benchmark scores in all four subject areas compared to 31% of Whites (ACT, 2011). The impact of a student not being college ready when attending college depends on where the student attends college. In a community college setting, students could be placed in several levels of remedial coursework in mathematics and English before being able to take credit-bearing courses. At a 4-year institution, accepted students might have provisional acceptance that requires them to attend the institution in the summer prior to fall freshman enrollment. Other students who are considered not college ready may attend the institution with no remediation or provisions and will instead struggle in school.

In a follow-up study to a groundbreaking data essay, Adelman (2006) used the National Education Longitudinal Study (NELS): 88/2000 study in the report "The Toolbox Revisited." The NELS: 88/2000 study followed 8th-graders in 1988 continuously until 2000 by conducting student interviews and reviewing high school and college transcripts. He found confirmation from his previous findings in 1999 that the academic intensity of a student's high school experience provides the most momentum precollege to ensure the achievement of a bachelor's degree. Additionally, Perna and Titus (2004) focused their efforts on specific instructional content and found that the highest level of mathematics taken was one of the greatest predictors of college enrollment and completion. In sum, the quality of instruction and support that students can access in high school matters.

Remedial courses have been higher education's most typical response to assist unprepared students. According to the National Center for Educational Statistics, one-third of first-year students take remedial courses in reading, writing, or mathematics.

Freshmen who attend two-year colleges are more likely to take remedial courses (42%) compared to students who attend four-year institutions (20%). Remedial courses are more likely to be taken in mathematics than in writing or reading at either type of institution (National Center for Educational Statistics, 2001). Students who are considered unprepared often do not attempt college, often becoming part of the summer melt phenomenon. Those who are underprepared but do enroll in higher education can face other significant barriers. Most recently, interventions have been explored to address the summer melt phenomenon and these are presented next.

Summer Melt Interventions

Summer melt has been defined as the number of high school graduates who intend, apply, and are accepted to go to college in the fall after graduation but end up not enrolling (Castleman, Arnold, & Wartman, 2012; Castleman & Page, 2012). Summer melt, in itself, is not considered a barrier but, rather, a result of the barriers that prohibit college attendance. The importance of addressing summer melt for students who intend to go to college stems from the fact that in many cases the failure to attend college has less to do with desire and more to do with the complicated path of navigating the college-going process. Interventions that relate to summer melt are conducted by both sending and receiving institutions—high schools and IHEs.

High School Interventions

Castleman, Page, and Schooley (2013) noted that during the summer after graduation, students no longer have access to high school counselors and yet they have many tasks yet to complete. Some of these tasks include financial aid, course enrollment, and medical and housing paperwork. These tasks can be especially difficult for

first-generation and low-income students. The elimination of these barriers and therefore the potential elimination of summer melt are the focus of several interventions found in the literature.

Daugherty (2012) investigated the impact of a two-hour counseling session held in the summer after graduation for students who intended to attend college. The program showed a 9–11% improvement in the probability that the students would attend college. Students who were planning to attend a 4-year institution, had completed their financial aid applications, and had completed their college entrance exams showed the greatest impact from this program. Castleman and Page (2013) described two additional successful interventions for reducing summer melt. The first intervention included both students who indicated they intended to go to college and their parents receiving 10 text message reminders regarding required next steps in order to attend their intended IHE. The text messages were timed near due dates and were customized to the IHE of planned attendance. The messages also allowed students to request assistance from a counselor if needed. The second intervention was a "near-peer" age mentor connected with high school students who intended to go to college as a way to support them through their transition. The mentors provided students with information, encouragement, details regarding the college experience, and connections to professional support when needed. Results indicate that the texting intervention was more impactful for students who had less access to college planning support. Among economically disadvantaged students, there was a 4% difference (in the desired direction) among students who received the texting treatment compared to students in the control group who did not receive the texts. When adjusting for working cell phones, the impact is an 8% difference. The peer

mentor intervention showed a positive impact on students but not enough to be statistically significant. Finally, at one of the intervention sites, it was found that students with no stated interest in attending college had significantly higher attendance rates in on-time college attendance for both interventions. The texting intervention group improved by 6% and the peer mentor group improved almost 9%.

Building upon Daugherty's work, further investigation of interventions that have high school counselors available also appear to be a promising approach to reducing summer melt. Castleman, Arnold, and Wartman (2012) randomly assigned seven small urban high schools in Rhode Island to receive outreach from high school counselors during the summer. Specifically, counselors focused on addressing financial and informational barriers. Advisors were provided a college-assessment protocol to be completed when they first met with students in person. Students and counselors then created a personalized list of tasks that needed to be completed in order to be ready for college in the fall. Counselors then followed up with students throughout the summer through various forms of communication. The results of the study showed that the 80 students who received the treatment were 14% more likely to enroll immediately in college and 19% more likely to continue with their postsecondary plans.

Higher Education Interventions

IHEs have also attempted to prevent summer melt for their intended incoming freshman classes. Hoover (2009) described various attempts by college admission officers around the country to keep admitted students engaged, such as calling them, conducting surveys, offering financial counseling, providing a summer checklist, and using Twitter to communicate with incoming freshman. The academic literature

involving summer melt is not very extensive and includes a couple of predominant researchers on the topic. As this area of study expands, more literature of what works to improve melt rates should become more prevalent. The literature that does exist frequently focuses on summer bridge programs.

Summer Bridge as an Intervention

Summer bridge programs have been developed, primarily by IHEs, to prepare students academically and socially for college. Programs are normally short and intense, with the intention of assisting either students on probationary admission or students who are judged to not be academically or socially prepared (McCurrie, 2009). The research indicates that these bridge programs are successful in improving college academic performance and rates of persistence (Ackermann, 1991; Garcia, 1991; Gold, Deming, & Stone, 1992). Cabrera, Miner, and Milem (2013) conducted a longitudinal study on the impact of a summer bridge program held by the University of Arizona. The University of Arizona's New Start Summer Program (NSSP) is open to all full-time freshmen, but traditionally has participation mainly from underserved populations. The NSSP is a six-week bridge program whose purpose is to orient students to college life while developing skills to navigate the system. Specifically, opportunities include enrolling in courses, living in dorms, attending social events, and learning about academic and social supports. Participation in the program was found to be a significantly positive predictor for first-year retention and grade point average (GPA) after controlling for entering student characteristics. After controlling for different variables such as academic experience, academic engagement, and academic self-concept, participation in the program became insignificant in predicting retention and GPA. The researchers

suspected that this meant the program's impact had an indirect effect on retention and GPA. Wathington et al (2011), from The National Center for Postsecondary Research, (NCPR) along with the Texas Higher Education Coordinating Board (THECB) conducted an analysis of eight summer bridge programs throughout Texas. The purpose of this research was to assess whether these bridge programs reduced the need for developmental coursework and improved outcomes. Consenting students from the eight colleges were separated into a treatment group that attended a bridge program and a control group that was provided the college's normal services. Students participated in the developmental summer bridge programs in the summer of 2009. Their academic progress was followed through the 2010–11 academic year. All of the developmental summer bridge programs had four common features: an accelerated format, academic support, a "college knowledge" component, and the opportunity for participants to receive a stipend. The preliminary study found that students who participated in the summer bridge program were more likely to pass college-level courses in math and writing in the fall. They were also found to be more likely to attempt higher level coursework in reading, writing, and math. In a follow-up study, Barnett et al (2012) reexamined the impact of these bridge programs two years later and found that the program, initially examined by Wathington et al, had no affect on the average number of credits attempted or earned. They also found that after a two-year period, the difference in the passing rates in math and writing was no longer statistically significant compared to the control group that received regular college services but did not participate in a bridge program. Finally, the programs showed no impact on persistence.

Two studies focused on the impact of students' feelings after participating as well as their performance. Strayhorn (2011) examined a population of academically unprepared students enrolling in a predominantly White university. Fifty-five low-income students of color who were enrolled in a summer bridge program found that a summer bridge program improved their college readiness and helped them socially adjust to college. The researcher found through a survey that the students' feeling of self-efficacy improved. Also, the feelings of self-efficacy were positively related to their fall GPA scores. Allen and Bir (2011–12) examined four constructs on academic performance and persistence for summer bridge and non-summer bridge participants. They found that after the first year of college, bridge participants had higher GPAs and better persistence rates going into the sophomore year of college than students who did not participate in the bridge program. They also found that bridge students had better academic confidence than non-bridge participants.

Kallison and Stadler (2012) stated that the two programs they investigated, as well as previous research, showed that effective summer bridge programs had certain necessary components in order to be effective. These characteristics include a strong relationship with the partnering school districts, professional development for program staff members, orientation sessions and closing ceremonies, transportation, parent involvement, available labs, academic advising and support services, and formative and summative evaluations. Summer bridge programs that are well thought out and have the characteristics described above serve as effective tools for college readiness.

Summer Bridge Creation

For the summer bridge program investigated in this study, much of the creation of the program was based on research related to what appears to work. As described earlier, Daugherty (2012) found that students who showed the greatest impact from a summer counseling intervention had plans to attend the institution, completed their financial aid applications, and completed their college exams. Research such as this stemmed the developers of this summer bridge program to build in these components. Students who participated in the bridge program had to show interest (in the fall of their senior year) in attending the local community college prior to applying for the bridge program. Another requirement of students was that they complete their FAFSA or TASFA prior to attending the program. Students and their parents received assistance in the completion of these forms from financial advisors as well as college access-related community-based organizations. The program also consisted of requiring students to take the community college placement exam prior to the bridge program. Students who placed into developmental levels at the IHE also had access to take the test again during the bridge program, and tutoring was given directly to help in their placement scores.

Kallison and Stadler's (2012) work was also utilized as references when building this program. Through the partnership in various college readiness grants and the relationship between the school superintendent and the community college president, a system of partnering on projects was already established between the two entities. The program staff members, which included a program director, two Communities in Schools (CIS) staff members, and a tutor, were trained by district and community college staff to ensure an understanding of roles. Also, based on the literature, students attended a

pre-enrollment session, a 4-hour orientation session, and a closing celebration. Transportation was provided to and from students' homes to the school every day that summer bridge activities occurred. Finally, other elements that were included in the program were parent involvement through Family Services, tutorial labs available daily, academic counseling from a tutor and college advisor, support services provided by CIS staff, and formative and summative evaluations through the district's research department.

Another unique feature of the summer bridge that specifically addresses summer melt is the availability of a CIS manager at the community college. As mentioned previously, Castleman, Arnold, and Wartman (2012) found that having counselors available to the students in the summer helped with the transition from high school to college since they were available to assist with barriers. The CIS manager at the community college is an employee of the college. During the last 2 weeks of the bridge program, the counselor met with the bridge participants to go over the financial aid and enrollment process for the fall. Each student was given contact information in case they ran into difficulty. Regardless of the issue, the counselor was able to connect students to the right person or would assist them through the barrier.

The length of most bridge programs found in the literature was 5–6 weeks (Stolle-McAllister, 2011; Cabrera, Miner, & Milem, 2013; Haras & McEvoy, 2005). The available literature does not indicate an optimal length for a bridge program. The logic behind the eight-week course is that it would be a less intensely timed course than the normal five-week summer college course. The timing was also the longest available course in the summer, which, for the creators of the program, was optimal because it

allowed for less time to lose students between the end of the bridge and the fall semester. Consequently, the students who attended the summer bridge program remained engaged with course activities throughout the majority of the summer—essentially, the selection of an 8-week program bridged the time gap between spring graduation from high school and fall enrollment in college.

The intention of the developers of this bridge program was to build it with purposeful support systems that followed along very closely with what was found in the literature to be effective in a summer bridge program as well as elements that assisted in prohibiting summer melt. It appears implied in the literature that summer bridge programs actually help diminish summer melt rates, but the literature lacks empirical evidence that specifically investigates summer bridge programs as effective interventions for addressing summer melt. This study attempted to do this, while also investigating the impact of the bridge program on economically disadvantaged, minority, and first-generation students compared to students of similar demographics who did not participate.

Chapter 3

Research Method

The research project examined the effectiveness of a summer bridge program in preventing summer melt. This was done by first examining the melt rate for the district in total and then for students who intend to participate in the target community college. The analysis then examined if the melt is different for summer bridge participants compared to other students who planned to attend the community college. These analyses specifically examined impact on students based on ethnicity, economically disadvantaged status, and first generation. Specifically, the research questions for this study included the following:

- What were the overall outcomes of the summer bridge program?
- What was the district summer melt rate?
- To what extent were the students at the district level who experienced summer melt statistically different than students from the school district who attended college (overall, Hispanic/Non-Hispanic, economic status, and first-generation status)?
- What was the summer melt rate for the two target high schools?
- To what extent were the bridge program participants statistically different than the students from the target high school in the summer melt rate (overall, enrollment status, Hispanic/Non-Hispanic, economic status, and first-generation status)?

College Trends for the School District

The school district that was the focus of the study is a microcosm of the Houston area. The district contains two affluent high schools and two comprehensive Title I-qualified high schools. The school district has been looking at National Student Clearinghouse (NSC) reports for the past 4 or 5 years to discern its graduates' college-going rates. NSC data use financial records at IHEs to match up whether and where students attend college in the fall subsequent to high school graduation. NSC has participation from approximately 98% of all IHEs in the United States. Figure 2 shows the disparity of college-going rates between the two affluent high schools, the district average, and the two Title I qualified high schools. A school attains a Title I status when it has an economically disadvantaged student population of 40% or higher. When a school attains this status, it is entitled to federal funding to help address the needs of those students. The disparity between the affluent and non-affluent schools continues when examining the college graduation rate of these students six years after high graduation. Figure 3 depicts how the trend continues.

Figure 2. Comparison of College Attendance in the Fall Immediately after High School for Research District

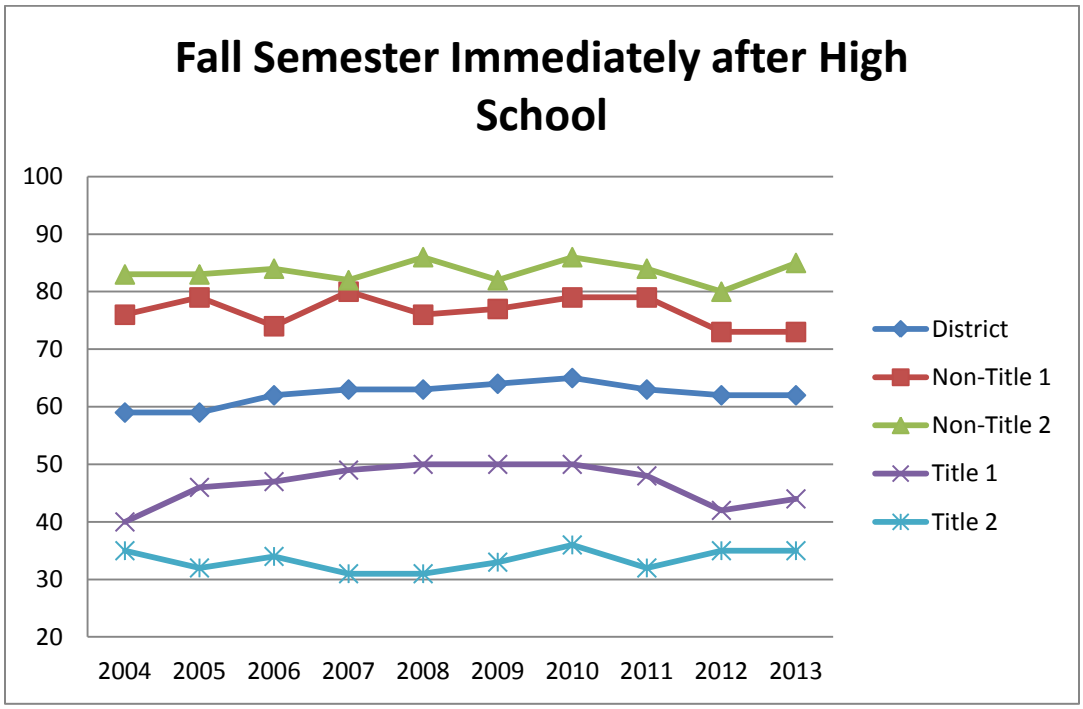


Figure 2. Lines represent the percentage of students attending college the fall after high school graduation from 2004 to 2013. Title 1 and Title 2 high schools are the high schools attended by bridge participants. The Non-Title schools and district average are included for comparison.

Figure 3. Comparison of College Graduation Rate 6 Years after High School Graduation for Class of 2006 and 2007

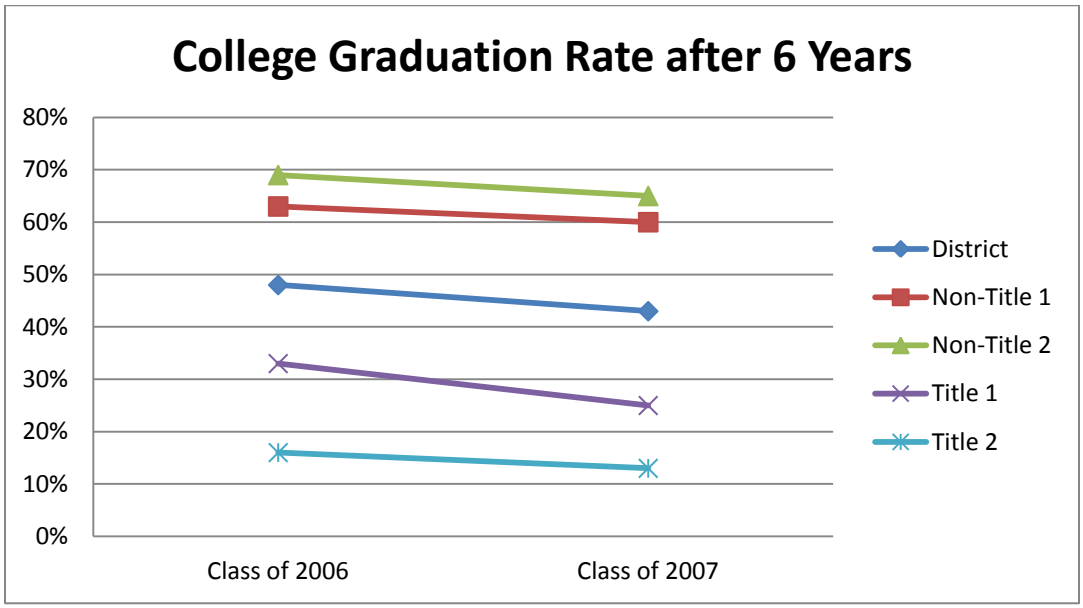


Figure 3. Lines represent the percentage of students graduating from college 6 years after high school graduation for Class of 2006 and 2007. Title 1 and Title 2 high schools are the high schools attended by bridge participants. The Non-Title schools and district average are included for comparison.

In a previous research project (Cobb, 2013), the Classes of 2010 and 2011 from the same school district were examined to ascertain how pervasive the summer melt rate was for the school district. In May, prior to each senior class graduating, the school district conducts a graduation practice survey with all seniors. The return rate for this survey is approximately 85%. On the survey, students were asked about their plans for the fall. The school district's top 25 most frequently attended IHE schools were listed as well as "other,""military,""workforce," and "unsure." The results of this question were then matched to the NSC data from the subsequent fall reports. For both classes, the analysis found that there was a pervasively high melt rate with the local community college (38% for Class of 2010 and 53% for Class of 2011). Specifically, roughly four

out of every 10 students who stated an intention of attending the target community college did not attend college at any institution that was included in the NSC database. When the demographics of the group of students who "melted" were examined, an average of 70% between the two classes were economically disadvantaged and 68% of students were Hispanic.

Summer Bridge Characteristics

The school district recognized the need to have a greater number of students attend college. In an attempt to provide an effective intervention for the large number of non-attendees at the two Title I qualified, comprehensive high schools, a summer bridge program was created by the school district. The summer bridge program was held over an 8-week period in the summer of 2013. This was the second year of the bridge program. Due to extensive changes from the pilot year, only 2013 data was examined. The participants in the summer bridge program were recruited by counselors and dropout specialists at each of the high schools. Initial recruitment came from students who expressed an interest in attending the program. Given the homogeneity of the high schools, the majority of students were economically disadvantaged, Hispanic, and first generation.

Prior to enrolling in the program, students were guided through an extensive application and enrollment process that is required of all applicants who attend the local community college. Steps included applying for the local community college, attending the pre-enrollment session, getting a meningitis shot, attending an orientation session, and taking a placement exam. To participate in the bridge program, the school district also required students to fill out a brief bridge program application and complete the FAFSA

or TASFA. In the first year of the bridge program, the FAFSA or TASFA completion was not required. Results from that pilot year led the organizers of the bridge program to quickly discover that failure to require completion of FAFSA or TASFA was a mistake. The lack of financial aid became one of the main hindrances in subsequent fall enrollment after completing the first summer bridge program in 2012.

The bridge program for both summers was held at one of the two high schools for eight weeks. Classes were held from Monday through Thursday, 9:00 a.m.–12:30 p.m., with a 30-minute free lunch available. Students were enrolled in a three-credit hour Student Success course, which taught the basics of understanding how college courses work as well as career exploration and a Fundamentals of Drawing course. The logic behind the Student Success course is that it is a required course for all students at this local community college and ensures that students have a basic understanding of course credits, syllabi, and how to build a major before progressing too far along in college. Fundamentals of Drawing was chosen as the other course. Most students placed at college-level English for the placement test, but many of the students placed at various levels of developmental math courses. As a result, Fundamentals of Drawing was agreed upon by the ISD and community college as a course that would be applicable as a fine arts credit to all of the participating students and would bypass the need for the students to be college ready in mathematics to take a credit-bearing course. It was also agreed upon by both entities that students would come out of the program with six college-credit hours, which would not have happened if they had taken a developmental class. In addition to course selection, various support structures were included to assist students in successful completion of the summer bridge.

Table 1. Components of the Summer Bridge Program

Services Provided	Financial Benefits Offered	Bridge Logistics
Transportation	Six hours of free tuition	Pre-enrollment and orientation required
Lunch	Free books and art supplies	Two 10-week courses held Monday through Thursday
Tutoring	Free placement testing	Bridge program at high school campus
Assistance with required meningitis shot		Staff included program director, two CIS workers, and a tutor
Assistance with FAFSA/TASFA completion		FAFSA/TASFA completion required
CIS services: assistance with social and health services		
Family Services: assistance with employment, how to interview for a job, parent involvement, and budget creation/planning		

Students received a scholarship for the six college hours as well as free books and art supplies. Students were also provided transportation to and from school, free tuition, books and art supplies, lunch, and tutoring services for classes as well as placement testing. The program staffing included a program director, two school social workers (CIS), and a tutor. Family Services, which is a community-based organization, provided students with life skills training such as how to set up a budget and how to interview for a job. They also held sessions in which parents were invited to attend. CIS provided assistance with receiving the required meningitis shot, finding employment, FAFSA/TASFA completion, and other social service needs as they arose.

Summer Melt Analysis

For this research project, a summer melt analysis of the Class of 2013 was conducted for these two high schools. At graduation practice, the school district conducts a survey of all students present regarding their high school experience. Students have the option of not completing the survey. Students who are not present do not have an opportunity to participate at a later date. The representation of the graduating class is generally 85% completion of the survey. As stated earlier, one question on the survey asks what students' plans are for the subsequent fall. Options include the top 25 attended colleges, a blank for a college not listed, military, workforce, or undecided. Students selecting the local community college and attending one of the two participating high schools were included in the study.

In November 2013, the NSC sent the school district a report that included an updated student list of graduates for the past several years and their college status. The NSC uses financial records to track students' enrollment in IHEs. The different statuses can include not attending, attending, or graduated. The NSC report also provides the name of the institution as well as information about whether the IHE is public or private and in-state or out-of-state. Students are also listed as attending part time or full time. Only the institutions of enrollment and attendance status were utilized. The survey item (subsequent plans for fall) from the graduation survey was then connected to the information in NSC. First, the district summer melt rate was calculated. Then, those students from the two high schools who indicated they were attending the target local community college were then compared to actual attendance records from NSC to determine the melt rate. Further investigation described the subpopulation of students

who did not attend the local community college when they said they would attend based on ethnicity, economically disadvantaged status, and first generation status.

The bridge program is an extensive effort and partnership between the school district and the local community college. In order for it to continue, it is essential that the program be impactful in deterring summer melt. To measure this, the same data connected with the graduation survey response of intending to go to the local community college compared NSC data of actual fall attendance with the identifier of "summer bridge participant" or "not included." Table 2 describes how students were included in this analysis. The sample narrows from 837 in the two high schools to approximately 700 students completing the survey from the two high schools. The sample narrows again to only include students who indicated that they planned on attending the local community college (~N= 340). See Table 2 for further description. A Chi square analysis determined if there was a difference in actual local community college attendance between the portion of summer bridge students who said they would attend the local community college and all other students stating they would attend the local community college. An analysis of the summer credits earned and the summer GPA also investigated to determine how bridge participants performed in the program.

Table 2. Summer Melt Analysis

Time Frame	Description	Population	% of Population	# of Population
May 2013	Senior Graduation Survey	All 12th graders from the two high schools attending graduation practice who chose to participate	~85%	~700 out of 837
November 2013	National Student Clearinghouse Data Matchup	All students who went to one of the two high schools and intended to enroll in the local community college	~48%	~340 out of 700

Summer Bridge Intervention

As stated earlier, students from two Title I schools were recruited to participate in a summer bridge program as an intervention to improve the melt rate. Students were initially recruited based on their interest in attending the local community college. The program began with 53 students, and 49 students completed the program. The effectiveness of the summer bridge as an intervention program was measured by comparing the 49 students who completed the program to all of the students (~340) from the two high schools who stated they intended on attending the local community college. A Chi Square analysis on the data described in Table 2 was conducted to determine if there is a difference between the two groups.

Chapter 4

Results

District and Campus Demographics

The demographic distribution of the school district by ethnicity and economically disadvantaged is listed in Table 3. As the values indicate, the majority of students in the school district are Hispanic. The majority of the district population would also be considered economically disadvantaged as measured by the percentage of students who qualify for free or reduced lunch. The demographic distributions for the State of Texas are also included for comparison. The populations are somewhat similar in distribution, with White being 27.9% for the district and 30.0% for the state. Also, economically disadvantaged is comparable, with 58.5% for the district and 60.4% for the state. When examining the demographic characteristics of the two high schools that are the targets of this investigation (Table 4), Hispanics are overrepresented in the two high schools (School A and School B) in this study (78.3% and 88.7% respectively) compared to both the district and the state. The same can be said with economically disadvantaged students, with 72.8% and 84.4% for the two schools. These demographics paint a clear picture that the two high schools in this research study represent high need schools with populations that have historically been underrepresented in IHEs.

Table 3. Demographic Distribution of Students in District and State

	District #N	District %	State #N	State %
African American	1,916	5.5	644,357	12.7
Hispanic	20,283	58.3	2,597,524	51.3
White	9,692	27.9	1,515,859	30.0
Asian	2,138	6.1	183,395	3.6
Economically Disadvantaged	20,354	58.5	3,054,741	60.4

Table 4. Demographic Distribution in Schools A and B

	School A #N	School A %	School B #N	School B %
African American	133	6.3	108	5.0
Hispanic	1,653	78.3	1902	88.7
White	220	10.4	22	1.0
Asian	67	3.2	26	1.2
Economically Disadvantaged	1,538	72.8	1,810	84.4

Graduation Practice Student Survey

The school district that is the object of this research study conducts a survey at graduation practice every year. Each school goes to the district coliseum to practice their graduation ceremony. Upon arrival, students find a paper survey and a pencil on each of the assigned chairs. Students are given 20 minutes to take the survey, which is gathered by district staff immediately upon completion. Table 5 lists the survey questions. The students in this survey are considered a captive audience, and the normal return rate is approximately 85%. The other 15% of students either refuse to complete the survey or do not attend the graduation practice, which is the only opportunity to take the survey.

The purpose of this survey was multifaceted. The district utilizes the contact information to follow up with students regarding their postsecondary experience. The "plans for after high school" component gauges what students are planning to do. District staff utilize student feelings about being prepared and overall experience to make instructional changes in programs. The questions regarding class rank were inserted to see if a policy decision made by the school board made a positive impact. Finally, students are asked whether a CIS manager could contact them to provide support while they attend the local community college. This is the same support person who helps students to transition from the bridge program to the local community college in the fall. The question that asks students which school they "plan to attend" is utilized to help gauge the "summer melt rate" of students. Summer melt, therefore, was determined by using the students who actually attended college in the fall as a proportion of those students who stated in the survey that they planned to attend college in the fall.

Table 5. Survey Items for Graduation Practice Survey

Name	Rating the Amount of Studying Done
District ID	Feeling of preparedness for postsecondary career or studies
Phone numbers	Rating the overall academic experience of high school
E-mail address	Rating the overall experience of high school
High school attended	Selecting intended IHE they plan to attend
When student began attending in district	Class rank sent to IHEs
Plans after high school	Choice of sending class rank advantageous
First-generation college student	Open-ended follow-up of why
Completion of FAFSA or TASFA	If going to local community college, permission to be contacted by CIS manager

The district officially reported 1,991 graduates for the Class of 2013. The survey was completed by 1,694 students, which represents a return rate of 85%. This survey has been conducted for the past 5 years and normally yields this type of return rate. For the purposes of this study, the results of only the applicable questions are reported. Table 6 shows the distribution of survey responses by high school compared to class graduation size. School A and School B are the schools that were the focus of this research study. The two schools in the research study have fairly representative responses from their students. Most of the differences in the response rates can be attributed to attendance at graduation practice. School A allows students to drive to graduation practices. School B buses all the students to the coliseum.

Table 6. Distribution of Survey Responses by High School Compared to Class Size

	Survey #	Senior Class #	% of Graduates Completing Survey
School A	368	439	83.8%
School B	372	388	95.9%
School C	442	582	75.9%
School D	402	440	91.4%
School E	106	142	74.6%
No Response	4	N/A	N/A
Total	1,694	1,991	85.1%

Table 7 indicates the distribution of students' plans after high school by the two schools in the research study. The majority of students at both high schools indicated they wanted to achieve a bachelor's degree (61.6% and 52.6%). Historically, the students from high schools A and B that do complete a bachelor's degree often go to the local community college and then to a 4-year institution that has an articulation agreement with the community college to ensure that all credits transfer. Therefore, the initial step for completing a bachelor's degree for many students is completing an associate's degree at the local community college. A large percentage of students from both schools planned to obtain an associate's degree (20.3% and 25.5%). In total, a high proportion of students from both schools aspired to a degree (81.9% and 78.1%).

Table 7. Distribution of Student Plans after High School by Target Schools

	School A Number & Percentage	School B Number & Percentage
Specialized Training	18 (4.9%)	19 (5.1%)
Associate's Degree	74 (20.3%)	94 (25.5%)
Bachelor's Degree	225 (61.6%)	194 (52.6%)
Military	13 (3.6%)	9 (2.4%)
Enter the Workforce	9 (2.5%)	10 (2.7%)
Don't Know	10 (2.7%)	30 (8.1%)
Other	16 (4.4%)	13 (3.5%)
Total	365 (100%)	369 (100%)

The next applicable question in the survey was "If you will be attending college next year, will you be the first person in your family to attend?" The survey item was used to gauge how many first-generation college students were planning to attend college. Table 8 shows the distribution of this question by the two research schools. This question will later become a variable to differentiate first-generation college students from those whose parents attended college. The results indicated that School A had an almost even split (50.5% first generation and 49.5% not first generation), whereas School B had more first-generation students, with 56.7%. The way that this question was worded did not take into account any older siblings who attended college. Therefore, these results could be somewhat misleading because the question did not distinguish between parents and siblings. In many cases, the students would have answered that they were first generation if not considering older siblings who had attended college. Some students, therefore, may have members in their immediate family who have experience with college and may be able to help them negotiate the system. At this time, that is not known.

Table 8. Distribution of First-generation College Students by Target Schools

	School 1 Number & Percentage	School 2 Number & Percentage
First Generation	185 (50.5%)	208 (56.7%)
Not First Generation	181 (49.5%)	159 (43.3%)
Total	366 (100%)	367 (100%)

The completion of the FAFSA or TASFA is the next survey item. Historically, the results from this question and actual FAFSA/TASFA completion have had major discrepancies, with reported completion being much higher than actual completion. For students who attended higher education in Texas, school districts have ApplyTexas data available to them. ApplyTexas also provides districts with an update on the student's FAFSA status, which includes values of FAFSA complete, FASFA missing income verification, and FAFSA not started. Often students believe they have completed the FAFSA only to realize they were missing one piece of the application. TASFA is for undocumented students in Texas to receive financial aid and is not reported on ApplyTexas. Table 9 shows the distribution of FAFSA/TASFA completion among the two research schools. According to the survey, both schools had approximately 60% financial aid completion rate.

Table 9. Distribution of FAFSA/TASFA Completion by Research Schools

Completion	School A Number & Percentage	School B Number & Percentage
Yes	223 (61.4%)	217 (59.3%)
No	140 (38.6%)	149 (40.7%)
Total	363 (100%)	366 (100%)

The next three questions asked students about their feelings regarding their academic experience while in high school. The first question asked about the amount of studying they had to do. Table 10 shows the results of this question. For the most part, students felt that the amount of studying they did was about right (64.1% and 80.2%). The survey also asked about how prepared students felt in regards to postsecondary studies or career. Table 11 indicates their responses to this question on a scale of "very well prepared" to "very poorly prepared." The largest percentage of students at both schools indicated that they felt "well prepared," with 42.4% and 48.8%. A large percentage also indicated that they felt "somewhat prepared," with 38.6% and 32.6%.

Table 10. Student Rating of How Much They Studied in High School

Completion	School A Number & Percentage	School B Number & Percentage
About Right	234 (64.1%)	296 (80.2%)
Too Much	26 (7.1%)	26 (7.0%)
Too Little	105 (28.8%)	47 (12.7%)
Total	365 (100%)	369 (100%)

Table 11. Student Rating of How Well High School Prepared Them for Postsecondary Studies or Career

	School A Number & Percentage	School B Number & Percentage
Very well prepared	46 (12.5%)	56 (15.1%)
Well prepared	156 (42.4%)	181 (48.8%)
Somewhat prepared	142 (38.6%)	121 (32.6%)
Poorly prepared	19 (5.2%)	8 (2.2%)
Very poorly prepared	5 (1.4%)	5 (1.3%)
Total	368 (100%)	371 (100%)

The survey continued to ask questions about students' high school experiences. The scale changed with students being asked to grade their overall academic experience and their overall high school experience. Table 12 shows the results for both questions. For academic experience, most students gave either School A or School B a "B," with 58.7% and 64.8% selecting this choice. The second highest grade for School A was a "C," with 22.1%; and for School B an "A," with 22.2%. For overall high school experience, students from both schools indicated "B" the most frequent score, with 58.7% and 64.8%. The second most frequently was "A," with 30.6% and 36.9%. This translates into students indicating a better overall experience than academic experience.

Table 12. Student Grading of Overall Academic and High School Experience

Academic Experience	**School A Number & Percentage**	**School B Number & Percentage**
A	62 (16.9%)	82 (22.2%)
B	215 (58.7%)	239 (64.8%)
C	81 (22.1%)	43 (11.7%)
D	8 (2.2%)	3 (0.8%)
F	0 (0.0%)	2 (0.5%)
Total	366 (100%)	369 (100%)
Overall Experience		
A	112 (30.6%)	137 (36.9%)
B	185 (50.5%)	192 (51.8%)
C	55 (15.0%)	35 (9.4%)
D	10 (2.7%)	5 (1.3%)
F	4 (1.1%)	2 (0.5%)
Total	366 (100%)	371 (100%)

The final question from the survey that is of importance to this study was "Which college, university, or technical school do you plan to attend?" The survey then listed the top 44 choices students most often select for this school district. In order to keep the confidentiality of the two high schools, the individual school choices will not be listed.

However, Table 13 indicates how many of the students from each of the two high schools chose the local community college as their intended school of attendance. School A had 29.5% chose the local community college, whereas School B had 32.6%.

Table 13. Students Intending to Attend the Local Community College

	Number	Percentage	Total
School A	104	29.5	352
School B	114	32.6	350
Total	218	31.1	702

Bridge Description

Recruitment

The bridge program's purpose was to target first-generation, economically disadvantaged students who planned to attend the local community college. Since the community college is open access, staff recruiting students did not filter for any criterion, such as test scores or GPA; the only criterion was interest in attending the local community college. As shown before with the demographics of the school, the large majority of students met the criterion of either being first generation or economically disadvantaged without being screened for them. However, the multiple steps to enroll in the community college that are required of any students created a natural filter of students more willing to go through the necessary steps. Summer bridge participation required students to complete these steps during the spring semester of their senior year instead of the summer when the student's schedule may be less hectic (See Appendix A).

Recruitment occurred in a two-tiered approach. The first recruitment was a visit to all senior classrooms where either a counselor or the bridge program coordinator

described the program for 15 minutes and then asked students to schedule an appointment after school to learn more about it. Students then met with staff member to learn about the requirements and logistics of the program. The second approach was to post flyers regarding an informational session about the program. Students and parents were encouraged to attend the session, which was held after school in an auditorium. Students who met individually with staff as well as newly interested students attended this session.

Program Logistics

The summer bridge program was held in the summer of 2013 from the second week in June until the last week in July, a span of 8 weeks. The time between graduation and the beginning of the bridge program was 2–3 days, with students graduating the last weekend in May and the bridge program starting on the first Monday in June. The courses offered were Learning Framework and Fundamentals of Drawing. The Learning Framework course is required by the community college and covers topics such as how to study, how to navigate the community college, and career exploration. The Fundamentals of Drawing course was selected because most students are required to take a fine arts credit in their degree plan. Also, the course did not require any students to meet a certain criterion for college readiness in reading, writing, or math based on the COMPASS test.

Students attended each course Monday through Thursday during the 8-week period. They attended each course for 90 minutes with a short break between sessions. The courses were set up so that students were distributed across two sections and each took one of the two courses. After the first 90 minutes, the two classes switched and

students attended the other course. The courses were held concurrently and lasted the entire 8-week period. After the first day of the bridge program, students had a computerized tutoring program available to them in the computer lab with a trained instructor. The tutoring program provided assistance on how to improve on the placement exam. Students took the COMPASS placement exam prior to entering the bridge program. Students were informed of their performance and what future remedial placement course, if applicable, they would be enrolled in if they did not improve their scores. They took it a second time during the last week of the bridge program. For the most part, students showed marked improvement in their COMPASS scores. The specifics of these scores were held by the community college and an overall impression of outcomes was provided to the district rather than detailed score reports. The available tutor also helped students with their coursework as much as possible.

Student Services and Staffing

Students received a full scholarship for the six credit hours of participation regardless of need. However, 95% of the students would be considered economically disadvantaged and would have qualified for financial aid. Students also received books and art supplies free of charge. In order to ensure access to the program for all students, bus transportation was provided for all students who wanted to use the service. After the two classes, lunch was served utilizing the federal free lunch program funds.

A unique aspect of the bridge program was the availability of two CIS case managers and Family Services assistance. CIS case managers are social workers who provided social services to students and their families as needed. Each of the two

participating high schools has CIS case managers who work during the school year at the campus. One CIS case manager from each school was paid a stipend to work over the summer for the bridge program. During the enrollment process, the CIS case manager assisted students in the college application process, FAFSA/TASFA completion, the required meningitis shot, and other assistance students needed. Family Services provided students and their parents with support regarding student employment, how to build a budget, how to pay for college, and other life skills that would assist students and their parents throughout their college years.

The staffing for the bridge program was provided both by the district and the community college. The district provided a stipend for a program director. The program director during the school year serves as a dropout prevention specialist. During the school year, the director actively recruited potential participants and monitored their progress in completing all necessary steps to be able to attend the bridge program. Staff members also included the two CIS managers mentioned previously as well as a tutor in the computer lab.

Staff that participated in the program but were not paid through the program included two professors, the director of research, two local community college-employed CIS managers, and CCC. The professors who taught the two courses were provided and paid by the community college. The director of research oversaw the two grants that funded this program and provided oversight and feedback to those running the day-to-day operations of the program. The director of research is an employee of the school district. The two additional CIS managers who helped toward the end of the bridge program as guides to navigate the community college in the fall are employed by CIS and work at the

local community college. Specifically, they assisted students with financial aid issues, placement testing, and registration. CollegeCommunityCareer is a community-based organization that normally takes students beginning in 10th grade and mentors them through the college-going process. They also keep in contact with students until they graduate from college. Due to the relationship already established with the school district, they agreed to modify their model for bridge students and take on any student who wanted a mentor throughout the rest of his or her college career.

Demographics of Bridge Participants

Students from the bridge program were recruited from the two Title 1 high schools. At the beginning of the recruitment for the bridge program in the spring, additional schools were included in the recruitment for another IHE. That aspect of the bridge program did not come to fruition, so students who were interested in attending the other IHE were allowed to attend this bridge program. The two students who opted to participate will be described here but will not be included in any additional analysis because they were not a part of the overall comparison population. Table 14 describes the demographics of the participants in the program.

Table 14. Demographics of Students in Bridge Program

High School	Ethnicity Number & Percentage	Economically Disadvantaged Number & Percentage	Total
School A	Hispanic 16 (80%) African American 2 (10%) Asian 1 (5%) White 1 (5%)	Yes 18 (90%) No 2 (10%)	20
School B	Hispanic 29 (97%) White 1 (3%)	Yes 28 (93%) No 2 (7%)	30
Other School	Hispanic 1 (50%) Asian 1 (50%)	Yes 2 (100%) No 0 (0%)	2
Total	Hispanic 46 (88%) African American 2 (4%) Asian 2 (4%) White 2 (4%)	Yes 48 (92%) No 4 (8%)	52

As described earlier, School A's overall Hispanic population is 78%, which would indicate that the breakdown of 80% Hispanic in the bridge program is fairly representative of the school population. The other ethnicities also are representative of the school population, with White being 5% for the bridge compared to 10% overall, African American representing 10% for the bridge compared to 6% overall, and Asian 5% for the bridge compared to 3% overall. Due to the small number of ethnicities other than Hispanic, a higher fluctuation in percentage is to be expected. For economically disadvantaged, there is a somewhat overrepresentation of this population in the program, with 90% compared to 73% for School A. This could be an indication of the difference in students who select a 2-year school versus a 4-year school given the cost difference.

School B had 93% students in the bridge program who were Hispanic. School B has a Hispanic population of 89%, which is fairly similar. The only other ethnicity represented in the bridge program for School B is White, with 3% compared to 1%

overall. Again, given the small number of this population, a higher fluctuation in percentages and a smaller representation is to be expected.

Chi-Square Test

One of the research questions of this study was to investigate if the bridge program encompassed a different group of students compared to the two high schools where the students attended. The desired result was that the populations would not be statistically different, so that the impact, if any, of the bridge program would more likely be due to the bridge program and not due to any differences in the two groups being compared. A Chi-Square test was run on the proportions of ethnicity and economically disadvantaged students to ascertain if the bridge students were statistically different from the rest of the graduating class of 2013 for the two target high schools. Table 15 shows the distribution of economically disadvantaged status compared to bridge participation. As the previous distribution tables showed, the percentage of economically disadvantaged represented in the bridge program is larger than the overall population distribution for the two participating campuses. Table 16 provides the results of the Chi-Square analysis for economically disadvantaged compared to bridge participation. The Chi-Square value is 3.520 and the probability level of the Chi-Square test is $p=0.061$, which would indicate there is no significant difference between the participants and nonparticipants in regards to economically disadvantaged status.

Table 15. Economically Disadvantaged Distribution between Bridge and Non-Bridge Participants

Bridge Participant	Non-Economically Disadvantaged	Economically Disadvantaged	Total
No	154 (18.5%)	680 (81.5%)	834 (100%)
Yes	4 (8.0%)	46 (92.0%)	50 (100%)
Total	158 (17.9%)	726 (82.1%)	884 (100%)

Table 16. Chi-Square Test of Economically Disadvantaged Students for Bridge and Non-Bridge Participants

Chi-Square Tests					
	Value	**df**	**Asymp. Sig. (2-sided)**	**Exact Sig. (2-sided)**	**Exact Sig. (1-sided)**
Pearson Chi-Square	3.520[a]	1	.061		
Continuity Correction[b]	2.843	1	.092		
Likelihood Ratio	4.211	1	.040		
Fisher's Exact Test				.084	.038
Linear-by-Linear Association	3.516	1	.061		
N of Valid Cases	884				

[a.] 0 cells (0.0%) have expected count of less than 5. The minimum expected count is 8.94.
[b.] Computed only for a 2x2 table.

The Chi-Square test was also run to evaluate if there is a significant difference in ethnicity between bridge participants and non-bridge participants. Table 17 shows the distribution among the groups. Please note that the number of Native Americans was not shown due to a number smaller than 5. When combining the two schools, it appears that there is an overrepresentation of Hispanic students in the bridge program and an underrepresentation of White students. Both of these discrepancies may be an indication again of students who are more likely to attend a community college versus a four-year institution. Table 18 shows the Chi-Square test results. Due to the low numbers of

ethnicities other than Hispanic, the ethnic codes were coded to non-Hispanic and Hispanic so that the assumptions of the Chi-Square would not be violated. The results show a Chi-Square value of 3.862 and a probability level of p=0.049, which indicated that there is a statistically significant difference among bridge participants and non-bridge participants when considering ethnicity. In sum, the students who attended the summer bridge program may not be representative of the high schools from which they had graduated when it comes to ethnicity. This is probably accredited to the fact that Hispanics are overrepresented in the bridge program; however, this is difficult to discern due to the necessary recoding to run the Chi-Square.

Table 17. Ethnic Distribution between Bridge and Non-Bridge Participants

Bridge Participant	Asian	African American	Hispanic	White	Total
No	31 (3.7%)	60 (7.2%)	645 (77.3%)	97 (11.6%)	834 (100%)
Yes	1 (2.0%)	2 (4.0%)	45 (90.0%)	2 (4.0%)	50 (100%)
Total	32 (3.6%)	62 (7.0%)	690 (78.1%)	99 (11.2%)	884 (100%)

Table 18. Chi-Square Test of Ethnic Distribution Students for Bridge and Non-Bridge Participants

Chi-Square Tests					
	Value	**df**	**Asymp. Sig. (2-sided)**	**Exact Sig. (2-sided)**	**Exact Sig. (1-sided)**
Pearson Chi-Square	3.862[a]	1	.049		
Continuity Correction[b]	3.145	1	.076		
Likelihood Ratio	4.600	1	.032		
Fisher's Exact Test				.054	.031
N of Valid Cases	733				

[a.] 0cells (0.0%) have expected count less than 5. The minimum expected count is 9.12.
[b.] Computed only for a 2x2 table.

Bridge Outcomes

When the summer bridge program began in June 2013, 52 students (this includes two students from another high school) were enrolled in the program. At the completion of the program, 49 students were still enrolled, which includes the two students from the other high school. All participating students were enrolled in both classes. Table 19 shows the grade distribution of participating students and the average GPA for each of the two classes. Students for the most part did well. Students who struggled in one class tended to struggle in both classes as can be seen in the GPA distribution in Table 20. The majority of students passed with an A or B (77.1% in Drawing and 85.4% in Foundations) and, taking both classes into consideration, the majority of students had a GPA of 3.00 or higher (74.5%) at the conclusion of the summer bridge program and six credit hours toward their associate's or bachelor's degree. State IHEs in Texas will accept grades with a C- or better as transfer credit. Forty-six students had a grade in Drawing that would transfer and 45 students had a grade in Foundations that would transfer.

Table 19. Grade Distribution of Bridge Participants by Class

Grade	Drawing	Foundations
A	21	25
B	17	17
C	8	3
D	2	1
F	1	3
Withdrew	3	3
GPA for Class	3.12	3.22

Table 20. Overall GPA Distribution of Bridge Participants

GPA	Number	Percentage
4.00	15	28.8%
3.00–3.99	23	44.2%
2.00–2.99	6	11.5%
1.00–1.99	3	5.8%
<1.00	2	3.8%
Withdrew*	3	5.8%
Overall GPA	3.17	-

*Withdrew not calculated in the GPA.

When examining ethnicity by overall GPA in Table 21, Hispanics have a lower GPA than other ethnicities, but all ethnicities are in the 3.00 or higher range. When examining economically disadvantaged status and GPA (Table 22), the results indicate that economically disadvantaged students performed better than non-economically disadvantaged. However, this could be a result of the small number (n=3) that represents the non-economically disadvantaged.

Table 21. GPA Distribution of Bridge Participants by Ethnicity

	Asian		African American		Hispanic		White	
GPA	#	%	#	%	#	%	#	%
4.00	1	50	-	-	12	27	2	100
3.00–3.99	-	-	2	100	21	47	-	-
2.00–2.99	-	-	-	-	6	13	-	-
1.00–1.99	-	-	-	-	3	7	-	-
<1.00	-	-	-	-	2	4	-	-
Withdrew*	1	50	-	-	2	4	-	-
Overall GPA	1	4.00	2	3.25	43	3.09	2	4.00

Note .One student included because of other ethnicity.
*Withdrew not calculated in the GPA.

Table 22. GPA Distribution of Bridge Participants by Economically Disadvantaged

	Economically Disadvantaged		Non-Economically Disadvantaged	
GPA	#	%	#	%
4.00	15	31	-	-
3.00–3.99	22	45	1	-
2.00–2.99	4	8	2	-
1.00–1.99	3	6	-	-
<1.00	2	4	-	-
Withdrew*	3	6	-	-
Overall GPA	46	3.17	3	2.67

*Withdrew not calculated in the GPA.

District Summer Melt

In order to gauge the summer melt rate for this school district, the graduation practice survey item that stated student intentions of which, if any, IHEs students planned to attend will be matched with actual IHE attendance based on NSC data described earlier. The analysis will then be narrowed to only examine the summer melt rate for the

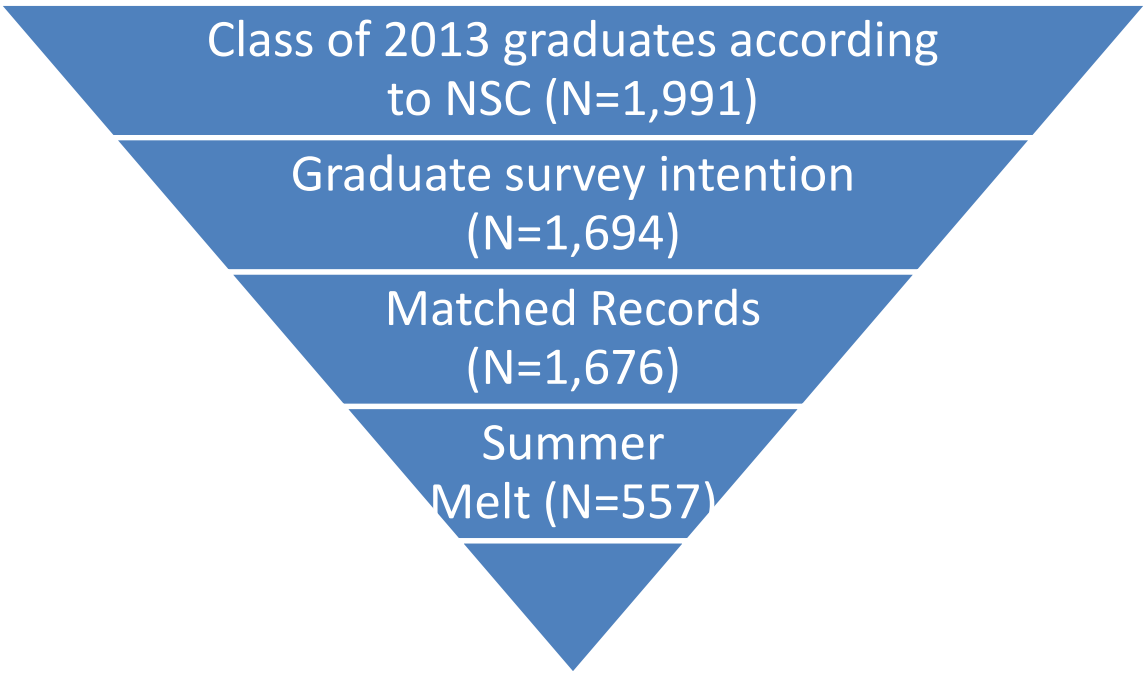
participating schools in the district. Summer melt for the purpose of this study is defined as students indicating (via the survey) that they plan to attend college in the fall and end up (according to NSC) not enrolling in any IHE.

Summer Melt Rate =

NSC no record of college attendance/intention of attendance according to graduation survey * 100

Figure 4 shows the narrowing of the data to create the analysis for the district melt. Step 1 shows the number of graduates (n=1,991) NSC indicated that the school district had for the class of 2013. Step 2 indicates the number of students that completed the graduation survey (n=1,694). For Step 3, these two pieces of data were merged and 1,676 students were found both in the NSC data and had completed a survey. The loss of 18 students came from the students not including their local ID to match up records and also not completing enough personal information to retrieve their ID from the school district's student database. Step 4 takes the 1,676 students to see if they melted or not. Summer melt for the purpose of this study is defined as students indicating (via the survey) that they plan to attend college in the fall and end up (according to NSC) not enrolling in any IHE. The school district had 557 students who met this criterion. That is, 557 students stated on the survey that they planned to attend college in the fall but were not enrolled in an IHE according to NSC data.

Figure 4. Narrowing of Data for Summer Melt Analysis



At the district level, students indicated one of 153 IHEs they planned to attend. In order to be a part of this analysis, students must have completed a survey and have a record in NSC. As stated before, 85% of graduates completed the survey. NSC has records for approximately 98% of the IHEs in the United States. When matching the two data sources, the number of students in the analysis becomes 1,676. When comparing intended IHE and actual attendance, students were grouped into the following categories:

- Attended college where they said they would
- Attended a different college compared to where they said they would
- Did not attend college but said they would
- Stated they would not attend college and did not attend
- Stated they would not attend college but did attend

Table 23 shows the distribution of students in the categories between intended college and actual fall attendance. The majority of students (53.3%) attended the college they stated on the graduation practice survey. The second largest category is comprised of students who did not attend college in the fall when they said they would (33.2%). This is the category that defines "summer melt."

Table 23. District Comparison of College Intention on Graduation Practice Survey and Actual Fall Attendance

	Number	Percentage
Attended college where they said they would	894	53.3
Attended a different college compared to where they said they would	112	6.7
Did not attend college but said they would	557	33.2
Stated they would not attend college and did not attend	89	5.3
Stated they would not attend college but did attend	24	1.4
Total	1,676	100

Chi Square Analysis of District Melt

The previous distribution shows that the summer melt rate for this school district is 33.2%. The literature review indicated that some of the characteristics of students that melt include being from a minority population, are economically disadvantaged, and being a first-generation college student. The following Chi-Square analysis examines whether there is a significant difference in these characteristics among the students who melted or not. Table 24 shows the distribution of different ethnic groups, with large differences between Hispanic and African American compared to White and Asian. The

Hispanic and African American groups have an almost 50% melt rate when combined compared to an 18% melt rate for the White and Asian groups. Table 25 displays the Chi-Square analysis for this comparison, with a Chi-Square result of 237.429 and a p = 0.000, which means the difference among groups is significant. Specifically, Hispanic and African American groups are significantly more likely to melt than other ethnic groups.

Table 24. Distribution of District Ethnicity by Summer Melt

	Attended College Number & Percentage	Melted Number & Percentage	Total
Asian	112 (81.8%)	25 (18.2%	137 (100%)
African American	49 (52.1%)	45 (47.9%)	94 (100%)
Hispanic	377 (49.2%)	389 (50.8%)	766 (100%)
White	549 (86.5%)	86 (13.5%)	635 (100%)
Total	1,087 (66.6%)	545 (33.4%)	1,632 (100%)

Note. Other ethnicities not delineated due to small numbers.

Table 25. Chi-Square Analysis of District Ethnicity by Summer Melt

Chi-Square Tests			
	Value	**df**	**Asymp. Sig. (2-sided)**
Pearson Chi-Square	237.429[a]	3	.000
Likelihood Ratio	248.726	3	.000
Linear-by-Linear Association	35.909	1	.000
N of Valid Cases	1,676		

[a]. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 31.24.

The next analysis compares the district melt rate by economically disadvantaged students. The distribution of students is displayed in Table 26. The distribution of economically disadvantaged shows an almost even split between those who attend

college in the fall and those who melt. For non-economically disadvantaged, the majority of students (83.1%) attend college in the fall. Table 27 shows the results of the Chi-Square analysis for economically disadvantaged by summer melt. The Chi-Square score is 217.776 and the p=0.000, which means there is a significant difference between groups. Specifically, students in the economically disadvantaged group were significantly more likely to melt.

Table 26. Distribution of District Economically Disadvantaged Status by Summer Melt

	Attended College Number & Percentage	**Melted Number & Percentage**	**Total**
Economically Disadvantaged	393 (49.1%)	408 (50.9%)	801 (100%)
Non-economically Disadvantaged	720 (83.1%)	146 (16.9%)	866(100%)
Total	1,113 (66.8%)	554 (33.2%)	1,667 (100%)

Table 27. Chi-Square Analysis of District Economically Disadvantaged Status by Summer Melt

Chi-Square Tests					
	Value	**df**	**Asymp. Sig. (2-sided)**	**Exact Sig. (2-sided)**	**Exact Sig. (1-sided)**
Pearson Chi-Square	217.776[a]	1	.000		
Continuity Correction[b]	216.242	1	.000		
Likelihood Ratio	223.966	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	217.645	1	.000		
N of Valid Cases	1,667				

[a.] 0 cells (0.0%) have expected count less than 5. The minimum expected count is 266.20.
[b.] Computed only for a 2x2 table.

The final district comparison of melt will examine the relationship of first-generation students. Table 28 shows the distribution between first-generation students and non-first generation students. The distribution again shows a somewhat even split between first-generation students who attended college and those who melted. Among students who are not first generation, the majority attended college (75.7%). Table 29 shows the Chi-Square value is 132.737 and the p=0.000, which means there is a significant difference among the two groups. Specifically, first-generation students are significantly more likely to melt.

Table 28. Distribution of District First-Generation Status by Summer Melt

	Attended College Number & Percentage	**Melted Number & Percentage**	**Total**
First Generation	241 (46.8%)	273 (53.1%)	514 (100%)
Non-First Generation	871 (75.7%)	280 (24.3%)	1,151 (100%)
Total	1,112 (66.8%)	553 (33.2%)	1,665 (100%)

Table 29.Chi-Square Analysis of District First-Generation Status by Summer Melt

Chi-Square Tests					
	Value	**df**	**Asymp. Sig. (2-sided)**	**Exact Sig. (2-sided)**	**Exact Sig. (1-sided)**
Pearson Chi-Square	132.737[a]	1	.000		
Continuity Correction[b]	131.442	1	.000		
Likelihood Ratio	129.060	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	132.657	1	.000		
N of Valid Cases	1,665				

[a.] 0 cells (0.0%) have expected count less than 5. The minimum expected count is 170.72.
[b.] Computed only for a 2x2 table.

Fall Entry in Local Community College

To track student entry into IHEs, this study utilized NSC data. NSC tracks students' enrollment status based on financial records. School districts upload their graduates' data and then receive a download of matched students. NSC data includes the student's name, local ID provided by the school district, social security number, record found (yes or no), high school (name and number), college (name and number), state of college, 2 year or 4 year, public or private, part time/full time/withdrawn, enrollment dates for each semester enrolled, graduation (yes or no), and sometimes degree earned and major.

The Class of 2013 for the district had 1,991 graduates submitted by the district to NSC; 1,222 students were enrolled at some IHE in the fall of 2013. Between the two high schools, 196 out of 439 students, or 44.6%, were enrolled in an IHE for School A; and 134 out of 388, or 34.5%, for School B. The number of bridge students going to <u>any</u> college in the fall would be 25 out of 49, or 51%. This would be the group that did not

melt, whereas 24, or 49%, did melt. The number that went specifically to the local community college is 17. Table 30 indicates the distribution of students in the two high schools who attended the local community college with the distinction of bridge and non-bridge participation.

Table 31 shows the enrollment status of students at the local community college by bridge participants and non-participants at the two schools. The majority of the bridge participants attending the local community college are at half-time status (n=13, or 76.5%). For non-bridge participants, the largest percentage was also at half-time status, with 37 out of 73, or 50.6%. A Chi-Square test was run on enrollment status to see if there was a significant difference between bridge and non-bridge students. To meet the assumptions of the Chi-Square test, the statuses of withdraw and less than halftime were eliminated. Table 32 indicates the Chi-Square of 21.424, a probability level of p=0.000, which means there is a significant difference between bridge participants and non-bridge participants on status. Specifically, this indicates that students from the bridge program attend college more consistently at a part-time rate than non-bridge students who attend at all different enrollment statuses.

Table 30. Fall Attendance at Local Community College by Bridge and Non-Bridge Participants

	Bridge Participant	Non-Bridge Participant	Total
High School A	8 (47.1%)	44 (60.3%)	52 (57.8%)
High School B	9 (52.9%)	29 (39.7%)	38 (42.2%)
Total	17 (100%)	73 (100%)	90 (100%)

Table 31. Enrollment Status at Local Community College by Bridge and Non-Bridge Participants

	Bridge Participant	Non-Bridge Participant	Total
Full Time	4 (23.5%)	23 (31.5%)	27 (30.0%)
Half Time	13 (76.5%)	37 (50.9%)	50 (55.6%)
Less than Half Time	0 (0.0%)	9 (12.3%)	9 (10.0%)
Withdrew	0 (0.0%)	4 (5.5%)	4 (4.4%)
Total	17 (100%)	73 (100%)	90 (100%)

Table 32. Chi-Square Test of Enrollment Status at Local Community College by Bridge and Non-Bridge Participants

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.424[a]	2	.000
Likelihood Ratio	15.338	2	.000
N of Valid Cases	733		

[a]. 1cell (16.7%) has expected count less than 5. The minimum expected count is 4.26.

Bridge Impact on Summer Melt

The next analysis of summer melt will go through the same steps but will narrow further to only examine the summer melt rate at the two high schools for students who planned to attend the local community college. Further analyses will separate bridge participants from non-bridge participants to see if the bridge program impacted the melt rate for those who attended. Figure 5 shows the narrowing of the data to create these analyses. The process is the same as the previous melt analysis but focuses in on the two target high schools (N=733) and those who stated on their graduation survey that they planned to attend the local community college (N=373). The melt rate (N=160/373) comes from the students who said they would attend the local community college and did

not. In Table 33, the two target high schools are compared to these five categories. The two target high schools have the majority of their students falling into the summer melt category, with 49.0% and 52.7% respectively. The second highest category for both schools is comprised of students who attended where they said they would go (38.3% and 25.9%).

Figure 5. Narrowing of Data for Summer Melt Analysis of Two Target High Schools at Local Community College

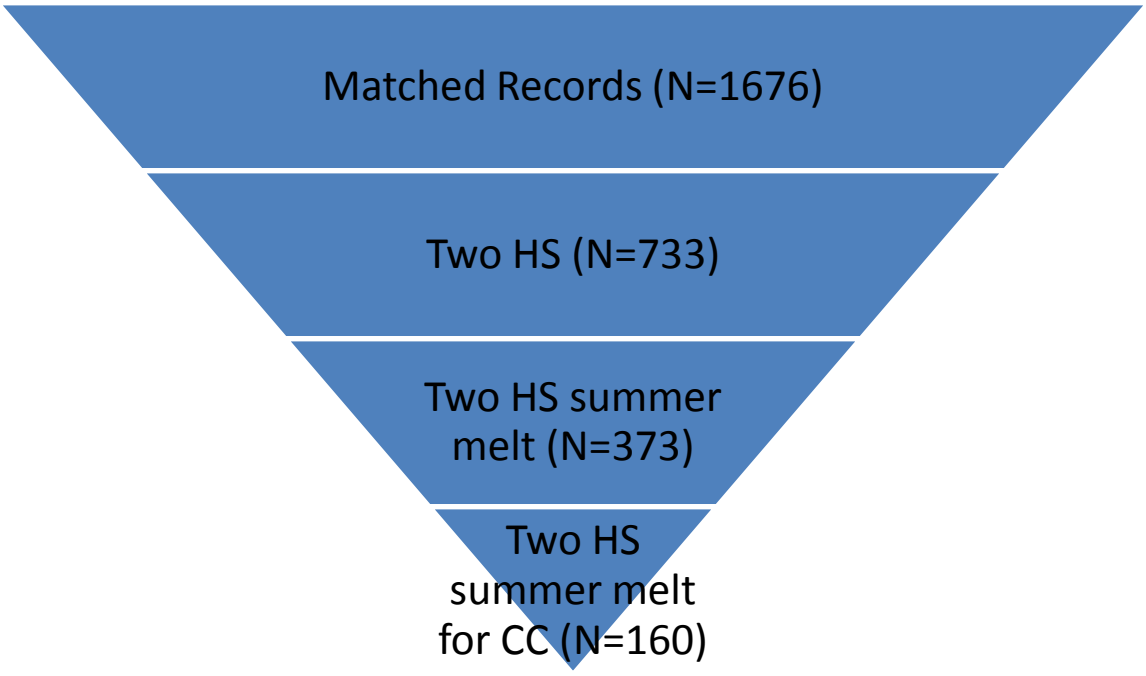


Table 33. Comparison of Two High Schools' College Intention on Graduation Practice Survey and Actual Fall Attendance

	Research School A Number &Percentage	Research School B Number & Percentage
Attended college where they said they would	139 (38.3%)	96 (25.9%)
Attended a different college compared to where they said they would	27 (7.4%)	33 (8.9%)
Did not attend college but said they would	178 (49.0%)	195 (52.7%)
Stated they would not attend college and did not attend	19 (5.2%)	43 (11.6%)
Stated they would not attend college but did attend	0 (0.0%)	3 (0.8%)
Total	363 (100%)	370 (100%)

When filtering the summer melt category for the local community college, it becomes apparent that many students from these schools who plan to attend community college do not attend in the fall. Table 34 shows the breakdown by school, with School A having a melt rate of 70.9% and School B having a melt rate of 76.3% for the local community college. This is in comparison to School A's overall melt rate of 49.0% and School B's overall melt rate of 52.7%, as indicated on Table 33. Table 35 indicates the summer melt rate for bridge students is 58.3% and 56.3% at School A and School B, respectively. In comparison, the students not attending the bridge program had a higher melt rate of 72.5% and 79.6% for School A and School B respectively.

Table 34. Summer Melt Rate by High School for the Local Community College

	School A Number & Percentage	School B Number & Percentage
Attend	27 (26.2%)	21 (18.4%)
Did not attend	73 (70.9%)	87 (76.3%)
Other categories*	3 (2.9%)	6 (5.3%)
Total	103 (100%)	114 (100%)

*Other categories include attended a different college compared to where they said they would, stated they would not attend college and did not, and stated they would not attend college and did attend.

Table 35. Summer Melt Rate by High School for the Local Community College by Summer Bridge Participation

	School A Number & Percentage Bridge Participant	School A Number & Percentage Non-Bridge Participant	School B Number & Percentage Bridge Participant	School B Number & Percentage Non-Bridge Participant
Attend	5 (41.6%)	22 (24.2%)	7 (48.3%)	14 (14.3%)
Did not attend	7 (58.3%)	66 (72.5%)	9 (56.3%)	78 (79.6%)
Other categories*	-	3 (3.3%)	-	6 (6.1%)
Total	12 (100%)	91 (100%)	16 (100%)	98 (100%)

*Other categories include attended a different college compared to where they said they would, stated they would not attend college and did not, and stated they would not attend college and did attend.

Chi-Square Analysis on Local Community College Summer Melt by Bridge Participation

The previous analysis examined the melt rate of students in the district by ethnicity, economically disadvantaged, and first generation. The following analysis will now try to decipher if participating in the bridge program impacts the melt rates overall and in the targeted populations, which are minority (specifically Hispanic), economically disadvantaged, and first generation to go to college students. The first analysis examines the overall impact of the summer bridge program on summer melt. Table 36 is a Chi-Square analysis of bridge participation by summer melt. The Chi-Square is 4.568

and the p=0 .033, which means there is a significant difference. This analysis would indicate that non-bridge participants from Schools A and B are significantly more likely to melt. Students who attended the summer bridge program are more likely than their peers to attend college in the fall after graduation.

Table 36. Chi-Square Analysis of Bridge Participation by Summer Melt

Chi-Square Tests					
	Value	**df**	**Asymp. Sig. (2-sided)**	**Exact Sig. (2-sided)**	**Exact Sig. (1-sided)**
Pearson Chi-Square	4.568[a]	1	.033		
Continuity Correction[b]	3.638	1	.056		
Likelihood Ratio	4.195	1	.041		
Fisher's Exact Test				.040	.032
Linear-by-Linear Association	4.547	1	.033		
N of Valid Cases	217				

[a.] Cells of 0 (0.0%) have expected count less than 5. The minimum expected count is 7.35.
[b.] Computed only for a 2x2 table.

When examining ethnicity, Table 37 shows the distribution by ethnicity of students who attended the local community and those who melted. The majority of the population in both groups was Hispanic. Overall, the bridge students had a melt rate of 16 out of 28 students, or 57.1%, who intended to attend the local community college; compared to 131 out of 166, or 78.9%, for the non-bridge participants. Among Hispanics, 57.7% who participated in the bridge program melted. Non-bridge Hispanic students had a melt rate of 69.3%, or 131 out of 166. Figure 6 displays the data in Table 37 in a column graph to better show the discrepancy in attendance and summer melt.

Table 38 shows the Chi-Square analysis of bridge participation by ethnicity and summer melt. This statistic examines if there is a significant difference in ethnic groups when considering bridge participation on summer melt. Again, to meet the assumptions of Chi-Square, ethnicity was coded in Hispanic and Non-Hispanic. The Chi-Square overall is 19.688, with a significant p=0.000. This indicates that overall ethnicity does impact whether a student melts. The Chi-Square for non-bridge students is 18.502 and the p=0.000, which means there is a significant difference in this group. This indicates students' ethnicity impacts whether they experience summer melt, with Hispanic being more likely to melt. The Chi-Square for bridge students was not found to be significant. This would indicate that ethnicity does not have a significant impact on a student's summer melt when taking into consideration summer bridge participation. When reexamining Table 37, the distribution shows that Hispanic students who attended the summer bridge program attend college at twice the percentage of non-bridge Hispanic students (42.3% compared to 21.1% respectively).

Table 37. Summer Melt Rate for the Local Community College by Summer Bridge Participation and Ethnicity

Attended Local Community College			
	Bridge Participant	**Non-Bridge Participant**	**Total**
Asian	*	*	*
African American	*	*	*
Hispanic	11/26 (42.3%)	35/166 (21.1%)	46/192 (24.0%)
White	*	3/10 (30.0%)	3/10 (30.0%)
Subtotal	12 (100%)	45 (100%)	57 (100%)
Did Not Attend Local Community College (Melted)			
	Bridge Participant	**Non-Bridge Participant**	**Total**
Asian	*	-	-
African American	*	*	*
Hispanic	15/26 (57.7%)	131/166 (78.9%)	146/192 (76.0%)
White	*	7/10 (70.0%)	7/10 (70.0%)
Subtotal	16 (100%)	144 (100%)	160 (100%)

* Total includes ethnicity groups that have an N smaller than 5.

Figure 6. Summer Melt Rate for the Local Community College by Summer Bridge Participation and Hispanic

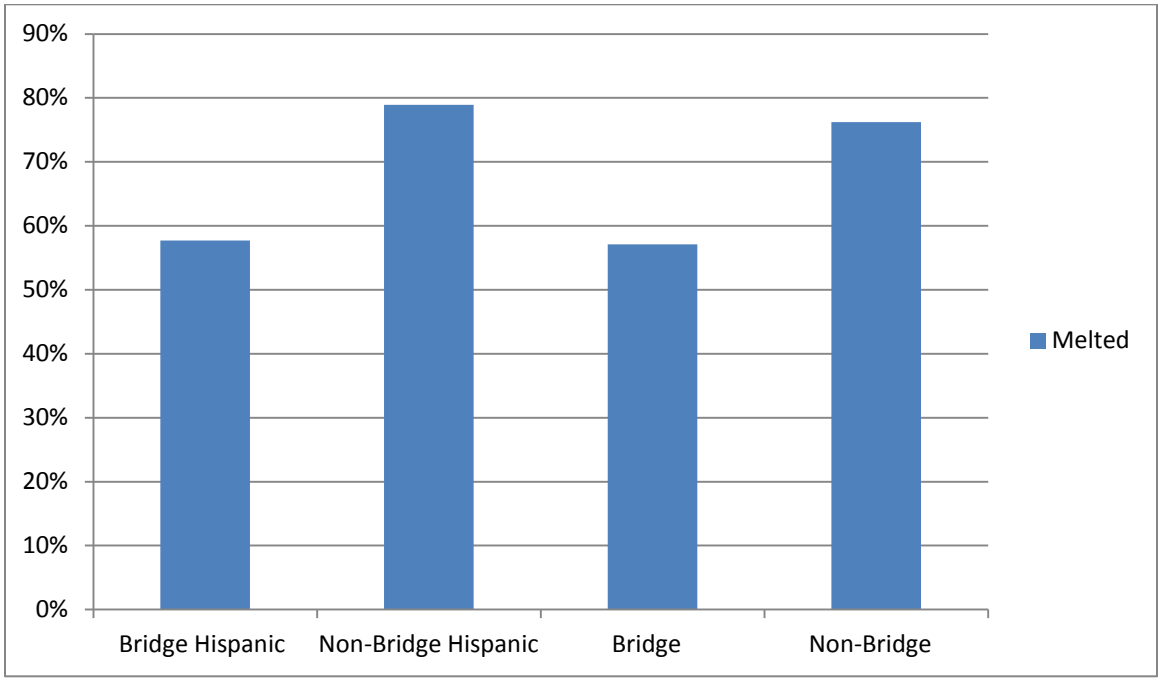


Table 38. Chi Square Analysis of Bridge Participation by Ethnicity and Summer Melt

Chi-Square Tests						
Bridge		**Value**	**df**	**Asymp. Sig. (2-sided)**	**Exact Sig. (2-sided)**	**Exact Sig. (1-sided)**
No	Pearson Chi-Square	18.502[c]	1	.000		
	Continuity Correction[b]	17.712	1	.000		
	Likelihood Ratio	18.706	1	.000		
	Fisher's Exact Test				.000	.000
	N of Valid Cases	689				
Yes	Pearson Chi-Square	1.312[d]	1	.252		
	Continuity Correction[b]	.385	1	.535		
	Likelihood Ratio	1.356	1	.244		
	Fisher's Exact Test				.335	.269
	N of Valid Cases	44				
Total	Pearson Chi-Square	19.688[a]	1	.000		
	Continuity Correction[b]	18.888	1	.000		
	Likelihood Ratio	19.913	1	.000		
	Fisher's Exact Test				.000	.000
	N of Valid Cases	733				

[a.] 0 cells (0.0%) have expected count less than 5. The minimum expected count is 74.65.
[b.] Computed only for a 2x2 table.
[c.] 0 cells (0.0%) have expected count less than 5. The minimum expected count is 72.82.
[d.] 2 cells (50.0%) have expected count less than 5. The minimum expected count is 1.91.

The next analysis takes a closer look at economically disadvantaged. In Table 39, when examining bridge students who were economically disadvantaged, 14 out of 25, or 56.0%, of students melted. The economically disadvantaged students who did not participate in the summer bridge program had a melt rate of 92.3%, or 131 out of 142.

Figure 7 displays this information from Table 42 in a bar graph to better show the discrepancy in groups. To determine if this difference in proportions is statistically significant, another Chi-Square analysis was conducted.

Table 40 indicates that the Chi-Square for non-bridge students is 8.215 with a significant p value of 0.004. This indicates that economic status does impact whether a student melts when they do not participate in a summer bridge program. For bridge students, the Chi-Square value is .124 and is not significant. This would indicate that economic status does not have a significant impact on a student's summer melt when they participate in a summer bridge program. Overall, the Chi-Square value is 5.944 with a p=0.015, which is significant. This indicates that overall economic status does impact whether a student melts. The areas of significance are identical to the analysis by ethnicity. The distribution among economically disadvantaged clearly shows that the melt rate of economically disadvantaged students is considerably lower for bridge participants compared to non-bridge participants. Specifically, economically disadvantaged bridge participants had an approximately six times better attendance rate than the economically disadvantaged non-bridge participants (44.4% compared to 7.7% respectively).

Table 39. Summer Melt Rate for the Local Community College by Summer Bridge Participation and Economic Status

Attended Local Community College			
	Bridge Participant	**Non-Bridge Participant**	**Total**
Economically Disadvantaged	11/25 (44.0%)	11/142 (7.7%)	22/167 (13.2%)
Non-Economically Disadvantaged	1/3 (33.3%)	34/46 (73.9%)	35/49 (71.4%)
Total	12 (100%)	45 (100%)	57 (100%)
Did Not Attend Local Community College (Melted)			
	Bridge Participant	**Non-Bridge Participant**	**Total**
Economically Disadvantaged	14/25 (56.0%)	131/142 (92.3%)	145/167 (86.8%)
Non-Economically Disadvantaged	2/3 (66.7%)	12/46 (26.1%)	14/49 (28.6%)
Total	28 (100%)	143 (100%)	159 (100%)

Figure 7.Summer Melt Rate for the Local Community College by Summer Bridge Participation and Economically Disadvantaged

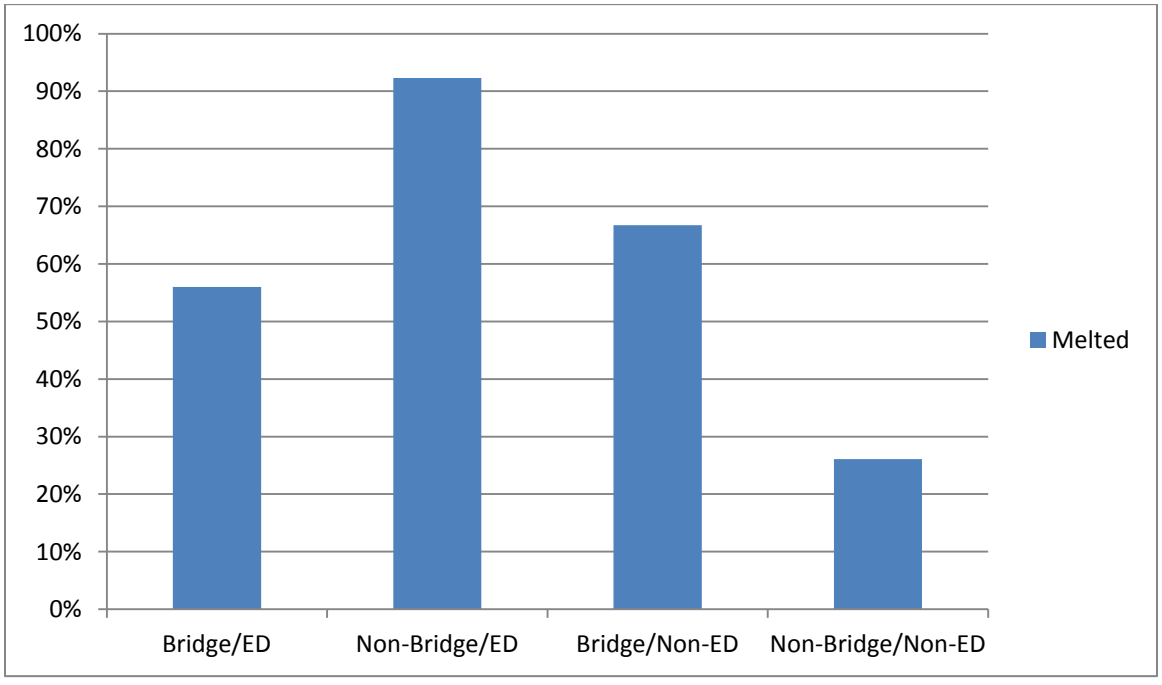


Table 40. Chi Square Analysis of Bridge Participation by Economically Disadvantaged by Summer Melt

Bridge		Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)
No	Pearson Chi-Square	8.215[c]	1	.004	
	Continuity Correction[b]	6.788	1	.009	
	Likelihood Ratio	7.220	1	.007	
	Fisher's Exact Test				.008
	Linear-by-Linear Association	8.171	1	.004	
	N of Valid Cases	188			
Yes	Pearson Chi-Square	.124[d]	1	.724	
	Continuity Correction[b]	.000	1	1.000	
	Likelihood Ratio	.127	1	.721	
	Fisher's Exact Test				1.000
	Linear-by-Linear Association	.120	1	.729	
	N of Valid Cases	28			
Total	Pearson Chi-Square	5.944[a]	1	.015	
	Continuity Correction[b]	4.844	1	.028	
	Likelihood Ratio	5.394	1	.020	
	Fisher's Exact Test				.030
	Linear-by-Linear Association	5.917	1	.015	
	N of Valid Cases	216			

[a]. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.86.
[b.] Computed only for a 2x2 table.
[c.] 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.51.
[d.] 2 cells (50.0%) have expected count less than 5. The minimum expected count is 1.29.

The final analysis examines the bridge participation by first-generation status and summer melt. Table 41 shows the distribution of first generation and not first generation as well with further separation by attendance or melt and bridge and non-bridge. The distribution indicates that among first-generation students in the bridge program 11 out of 19, or 57.9%, students melted. Among the first-generation non-bridge participants, the distribution was 50 out of 72, or 69.4%, who melted. Table 42 shows the Chi-Square test

for this population and none of the results are significant for non-bridge students, bridge students, or overall. This would indicate (as shown in Table 42) that although first-generation summer bridge students have a college attendance rate of more than twice that of first-generation non-summer bridge students (42.1% compared to 12.2% respectively), these difference are not statistically different according to the Chi-Square test likely due to sample sizes.

Table 41. Summer Melt Rate for the Local Community College by Summer Bridge Participation and First Generation

Attended Local Community College			
	Bridge Participant	**Non-Bridge Participant**	**Total**
First Generation	8/19 (42.1%)	23/117 (12.2%)	31/146 (21.2%)
Not First Generation	4/9 (44.4%)	22/72 (30.6%)	26 /81 (32.1%)
Total	12 (100%)	45 (100%)	57 (100%)
Did Not Attend Local Community College (Melted)			
	Bridge Participant	**Non-Bridge Participant**	**Total**
First Generation	11/19 (57.9%)	94/117 (49.7%)	105/146 (71.9%)
Not First Generation	5/9 (55.6%)	50/72 (69.4%)	55/81 (67.9%)
Total	16 (100 %)	144 (100%)	160 (100%)

Table 42. Chi-Square Analysis of Bridge Participation by First Generation by Summer Melt

Chi-Square Tests

Bridge		Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)
No	Pearson Chi-Square	2.918[c]	1	.088	
	Continuity Correction[b]	2.348	1	.125	
	Likelihood Ratio	2.866	1	.090	
	Fisher's Exact Test				.113
	Linear-by-Linear Association	2.902	1	.088	
	N of Valid Cases	189			
Yes	Pearson Chi-Square	.014[d]	1	.907	
	Continuity Correction[b]	.000	1	1.000	
	Likelihood Ratio	.014	1	.907	
	Fisher's Exact Test				1.000
	Linear-by-Linear Association	.013	1	.909	
	N of Valid Cases	28			
Total	Pearson Chi-Square	2.269[a]	1	.132	
	Continuity Correction[b]	1.814	1	.178	
	Likelihood Ratio	2.236	1	.135	
	Fisher's Exact Test				.152
	Linear-by-Linear Association	2.259	1	.133	
	N of Valid Cases	217			

[a.] 0 cells (0.0%) have expected count less than 5. The minimum expected count is 21.28.
[b.] Computed only for a 2x2 table.
[c.] 0 cells (0.0%) have expected count less than 5. The minimum expected count is 17.14.
[d.] 1 cells (25.0%) have expected count less than 5. The minimum expected count is 3.86.

Chapter 5

Discussion

The national emphasis on all students being afforded an opportunity to go to college is not a new one. Researchers and practitioners have quickly discovered that setting up students to go to college does not necessary mean students actually will attend college. The literature suggests there are numerous hurdles that can obstruct a student from going to college. Some of the obstructions include college costs and financial aid, lack of knowledge, and college readiness. Variables that impact the likelihood of students not attending college also include not attending in the fall after graduation, being from an underrepresented population, being economically disadvantaged, and being a first-generation college student (Adelman, 2006; Radford & Tassoff, 2009; Radford, 2010).

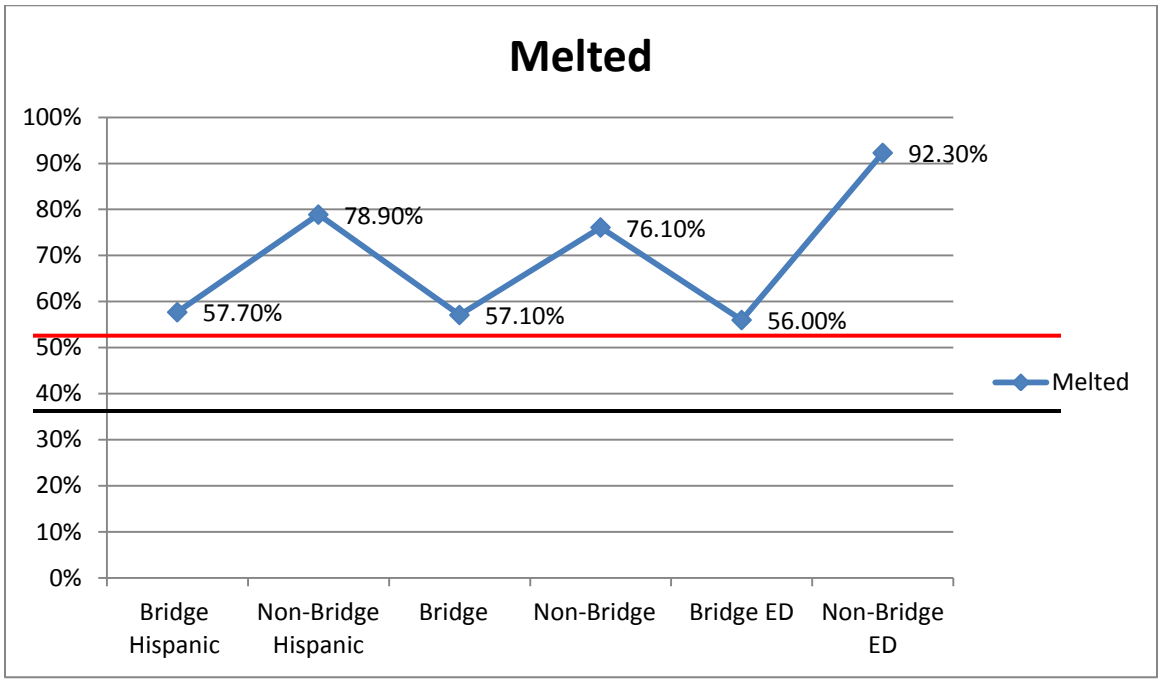
The school district that is the subject of this research study has a college-going culture and practitioners actively trying to improve the district's college-going rates. At first glance, the district's demographics are similar to those of the state. However, upon closer inspection, the district is bifurcated economically. Specifically, the district is home to two large affluent high schools, two large Title I high schools, and one charter school that draws from all parts of the district. As might be anticipated, with these demographics, there is a discrepancy in fall college attendance between the two affluent schools and the two Title I schools. The fall attendance discrepancy is as much as 50% points. Additionally, the same approximately 50% point discrepancy continues when examining college graduation rates after 6 years for the same campus comparisons. The district's experiences are not out of line with national figures.

Long (2007) found similar results; specifically, low-income families, with 43% of low-income students enrolling in college compared to 75% from higher income. Being in line with a national average in these measures is not enough for the district—college enrollment is a focused effort in the district. Students throughout the district should be receiving the same opportunities and the same college education. This school district specifically is considered to place a very heavy emphasis on getting students to and through college. So, why the discrepancy? It appears to be related to demographic variables, in addition, hurdles are getting in the way of college access and success. When focused attention was brought to the two Title I school, we find that these schools have large proportions of students who struggle with college enrollment and could benefit the most from targeted services and interventions.

While many potential solutions are being tried nationwide, the intervention chosen for analysis in this study was the district's summer bridge program. The fundamental question for the school board, administration, and funders: Did it work? Overall it appears that the district's summer bridge pilot did have an impact on the melt rate, credits earned, and GPA. Overall the melt rate for bridge participants was 57.1% (Figure 8) in the two Title I high schools; while non-Bridge participants had a melt rate of 76.1% in those same schools. This is a difference of 19.0% points—those who attended the summer bridge program were consistently more likely to attend college in the fall when compared with their peers. It was important for this study to demonstrate that the comparison peers were not different demographically from summer bridge participants, especially among underrepresented populations such as minority, economically disadvantaged, and first generation. Early analyses showed that these two groups are not

statistically different in the number of economically disadvantaged and first generation students, which means the bridge students are representative of the total population. However, Hispanics were found to be overrepresented in the bridge program. This difference can be accredited to the active recruiting of this underrepresented population and will be considered in the rest of the discussion. Figure 8 depicts how summer bridge participation lowered the melt rate for Hispanics, by economically disadvantaged status and overall. The red line in this graph shows the overall melt rate of the two target schools, which is 51%. The blue line depicts the overall melt rate for the district (33%) when considering all IHEs. The lower percentages for the bridge participants shows the impact of the bridge program in bringing populations with historically higher summer melt rates closer to the general population of the two target schools and the district melt rate. The target schools' overall population includes students who were high achieving and students who planned to attend four-year institutions. Both of which have lower melt rates than students who were lower achieving and planned to attend 2-year institutions.

Figure 8. Local Community College Summer Melt Rate by Bridge Participation and Overall



Note. The red line indicates the target campus melt rate, and the black line indicates the district melt rate.

When the results focus on specific subgroup analyses, Hispanic bridge students attending the local community college had a melt rate of 57.7% compared to Hispanic non-bridge students, with a rate of 78.9%. This is a difference of 21.2% points. Based on the Chi-Square analysis, there is a difference in bridge and non-bridge when it comes to ethnicity due to the overrepresentation of Hispanic students in the bridge program. Since this population is one of the target populations for the summer bridge program, its overrepresentation indicates that the targeting of this specific population was successful. When comparing the proportions of melt rates among Hispanic bridge students and Hispanic non-bridge students, the difference in melt rates is notable.

Results for the subgroup analyses related to economics are also encouraging. Perhaps the greatest indicator of the bridge program being a successful intervention for

summer melt is among students who are economically disadvantaged. The economically disadvantaged bridge participants had a melt rate of 56.0% compared to 92.3% for economically disadvantaged non-bridge participants, which is a difference of 36.3% points. These results are telling; however, the attendance rates show an even greater disparity when considering the entire population of students (economically disadvantaged and non-disadvantaged). The attendance rate is 44.0% for economically disadvantaged bridge students and 7.7% for economically disadvantaged non-bridge students. This represents a more than five times higher attendance rate for economically disadvantaged bridge students.

When the bridge program participants are analyzed as a single group, success can be found in the number of credits earned and the GPA attained. The overall GPA for students was 3.17. Forty-six out of 52 successfully earned six college credits, and one out of 52 successfully earned three college credits. It is important to note that both GPA and the credits are related to course credits that can be used for future degrees, either an associate's or bachelor's degree. In general, participants in the bridge left the summer program with a B grade average or better and six college credits.

Looking at the subsets within the summer bridge program, the data reflect that the program is having a positive impact both on Hispanic and economically disadvantaged students. However, it must be noted that for this sample participants are often both Hispanic and economically disadvantaged. The results did not, however, show a statistical difference among first-generation college students. This can either be accredited to the quality of the question in the graduation survey that did not distinguish between parents and older siblings going to college or that there was no impact.

Unpacking the Outcomes

To help with future replication of this study, it's important to discuss various components that were involved in data collection, intervention, and district comparisons. With a reflection on the available literature, these include graduation practice survey, summer bridge program components, summer bridge outcomes, district summer melt, and impact of summer bridge on fall enrollment/summer melt among target schools.

Graduation Practice Survey

The initial purpose of the graduation practice survey was to gauge students' satisfaction with their high school experience and to gather contact information so the school district could follow up with students a year later. More recently, the survey has evolved to assess policy impact and to help determine who is going to college and who is not. The district subscribes to NSC reports. Based on NSC information, the school district could already discern that the affluent campuses had a higher percentage of students going to college in the fall than the Title I campuses. The individual student reports could also tell the district specifically who attended and who did not. However, the NSC data alone could not tell the district if students' outcomes matched their intentions—that is, the NSC data alone could not isolate the summer melt rate. For a school district, it can be unfortunate when a student does plan to go to college and does not attend. It is rewarding when a student intends to go to college and does enroll regardless if he or she goes where intended or enrolls at another IHE. Conversely, students who intend to go to an IHE and do not attend can be the most frustrating for educators because they believe students are going forward to college only to discover that

they did not attend. The scenario of students not attending college when they intended to gave the graduation survey new purpose.

This graduation survey has become the data source for the school district to measure college intentions. In Cobb (2013), the comparison between the school of intention per the survey item was matched with actual attendance data from NSC. From this analysis, it was discovered that the melt rate of the school district for the Class of 2011 overall was 67%. When campuses were the focus of subgroup analyses, these values rose to a melt rate of 81% for the two Title I schools versus a melt rate of 31% and 32% for the two affluent schools. Among all schools, the melt rate numbers were the highest for the local community college. That is, students stated their intention as attending the local community college but did not attend the fall after graduation. This earlier analysis helped to give the district a targeted focus concerning where to spend additional efforts for ensuring students actually made it to college. Before this analysis and before NSC records, campuses believed that 80 to 90 percent of students were going to college. The reality is much different, especially for Title I campuses.

Another question tied to intention is the students' aspirations after graduation. Students from School A had 20.3% of respondents with aspirations for an associate's degree and 61.6% with aspirations for a bachelor's degree. School B had 25.5% students intending to earn an associate's degree and 52.6% a bachelor's degree. The importance of this question is that beyond the school of attendance, the question measures students' end goal. In sum, over 75% of students state an intention to get either an associate's or bachelor's degree. However, the proportion that goes on to attend college during that fall is considerably lower. If students from these two schools have a summer melt rate of

67% or higher (23% attend college) then a good percentage of students are starting off in the fall not working towards this goal. This is troubling; especially in light of the literature that stresses the importance of fall enrollment (Adelman, 2004; Radford et al., 2010).

FAFSA/TASFA completion rates also became an important component of the survey. Perna (2004) noted that in results of a Sallie Mae survey, 75% of respondents would more likely have enrolled in college had they received better financial information. Also, Eskstrom (1991) found that awareness of financial aid and college costs increased the likelihood of students enrolling in college. When addressing college with first generation and economically disadvantaged students, financial aid appears to be one of the top if not the most important aspect in ensuring students attend college in the fall. This survey's item only serves as a gauge to see if the district's initiatives toward improving FAFSA/TASFA appear to be working; however, the underlining importance of this step makes the work done toward completion all the more important.

Without the successful completion of the FAFSA/TASFA, financial aid to pay for college courses will not be available. As the National Center for Education Statistics (2012) noted, college costs have increased 42% for public institutions and 31% for private institutions in the past 10 years. The cost for any family to pay for college, not only economically disadvantaged, is a challenge and one that most often requires assistance from experts. Even for those students who attempt to pay for college through scholarships alone (regardless of need), they are more often than not required to complete the FAFSA to be considered for the award. FAFSA/TASFA completion has become a necessary step for almost everyone who attends college.

The final question from the survey that becomes an important element in the analysis is the question of whether the student is a first-generation college student. The results indicated that 50.5% of students from School A and 56.7% of students from School B were first generation. As noted previously, this question is problematic because it does not distinguish between their parents' going to college and possible older siblings who have gone to college. The results from this question were utilized as the indicator for first generation; however, it appears that the results are underreporting first-generation students as defined by their parents' college attendance. Moving forward, it will be important for the district to consider revising this question on the survey.

Summer Bridge Program

Program Logistics

The summer bridge program was one outcome of the district's response to what was happening to students when they graduated from high school. The prior analyses (2013) clearly showed that students were melting at the highest rates at the two Title I qualified high schools. The majority of students from these two high schools reported intended college attendance at the local community college. This made a partnering program between the district and the local community college a necessary first step toward remediating this problem. According to the literature review, the success of bridge programs appears to be dependent on the intentionality in which the program is constructed and the addressing of obstacles that tend to impede student progress. Bridge programs that are less successful tend to focus only on the academic preparation of the student rather than the whole student. As evident in the literature, college attendance and

success is based on overcoming obstacles and variables that prohibit a student from attending (Hahn & Price, 2008). Addressing only the academic components can ignore variables such as knowledge about navigating college or financial aid up to an inexperienced student, hopefully, navigating through it alone.

Kallison and Stadler (2012) listed the following as components in a bridge program: strong relationship with partnering school district, professional development for program staff members, orientation sessions and closing ceremonies, transportation, parent involvement, available labs, academic advising and support services, and formative and summative evaluations. The bridge program that is part of this research study intentionally has these components built into it and therefore appears to be promising. This bridge program is somewhat unique in that the creation and management is in the hands of the school district. Most bridge programs appear to be the impetus of the IHEs and not vice versa. This may be an indication of school districts taking more responsibility for the successful launching of their students after high school graduation.

The recruitment of students for this bridge program encompasses another important aspect of this program. The only filtering component of this program was the students' expressed intention to attend the local community college. This distinction is important because it speaks to the inclusiveness of the program as well as the representation of the students who attended the program. Students in this program represent what educators often find with economically disadvantaged, first-generation students. The decision to attend college for many of these students was made during their senior year and often in the second semester. These are not the students whose parents have asked them where they wanted to go since elementary school or who come from

families that have legacies at universities. These students, with some push from recruiters, are taking the leap into college with less time to plan. These students also tend to be average to below average in academic performance. Most top 10% of ranked high school students go to one of Texas' highly competitive state schools. The local community college tends to enroll school districts' bottom half in regards to class ranked students. These distinctions are important because their successes are harder to accomplish compared to those who performed better in school and had better defined college plans.

Student Services

What also appears to be unique to this program is the intentionality of the wrap-around services given to students. The literature lacks a bridge program that brings so many social services to the student in an attempt to address students' needs in numerous ways. The availability of CIS managers before, during, and after the program ensures that there is always someone there for these students. CIS Houston had never been in a college setting until the district in this research study and the president of the local community college decided that students needed continuity of social services throughout their academic experience, including high school. The financial aid and FAFSA/TASFA completion appears to be the biggest obstacle for students in this study, especially in relation to the local community college. Once students register for classes, they have 48 hours to pay for classes or have financial aid lined up before their classes are dropped. In four-year institutions, the registration of classes and payment due dates are several months apart. The speed with which payment is due is often shocking to incoming students and makes financial aid and FAFSA/TASFA components even more crucial.

Educators need to be ready to provide support to students as they navigate this process. CIS managers at the high school and bridge level have been trained to assist students in completing the FAFSA and TASFA. CIS managers employed by the local community college have been trained in how to guide college students through the financial aid process at the college and are available to answer questions of students who reach a roadblock. In the closing ceremony to celebrate the end of the bridge program, the CIS manager for the local community college conducted a presentation and gave bridge students her contact information to help them as they transition from the bridge program to the community college.

CIS managers have also been essential in assisting students to find free or low-cost meningitis shots, which, in 2012, became a requirement to attend Texas IHEs. When the requirement first came into place, the district and the community college noticed a decline in initial fall enrollment. Anecdotally, both entities heard from students that the delay stemmed from the meningitis shot requirement. For students who are 18 and under, clinics have now caught up with demand and low-to no-cost shots are more readily available. Students who are 19 years or older, which includes many bridge students, struggle to still find low-cost meningitis shots. This is another aspect in which the experience of CIS managers becomes very useful. In several cases, CIS managers helped students catch up on 7+ years of immunizations while getting their meningitis shots.

The inclusion of Family Services benefitted students with other social services. Students and parents attended two nightly sessions held at the high school where Family Services informed attendees about the services this community-based organization offered. Students also met with Family Services employees in a small-group setting and

individually, based on student needs. The main emphasis on the larger group was to assist students in how to create a budget, how to balance the cost of school and a job, and how to find and interview for a job. It should be noted that approximately 90% of bridge students were employed. The need to balance the demands of school and work will be present throughout these students' college careers and will be necessary to master in order for them to be successful in both school and life. Family Services provided these resources to them. One promising aspect of Family Services, similar to CIS, is that these services will continue to be available to students throughout their college career. Some students struggled to find the relevancy of this service early in their bridge career only to find them to be a life-saver when a family crisis occurred in the middle of the bridge program.

CollegeCommunityCareer (CCC) was the final partnering community-based organization for the bridge program. CCC's traditional targeted audience to support is economically disadvantaged and first-generation college students. CCC's mentor program begins with students at the end of their sophomore year in high school. The mentors then meet in a group setting once or twice a week throughout the rest of the students' high school years. CCC's mission is to help guide students through the college-going process and then continue to support students throughout their matriculation through college. CCC and the district in this study already had a partnership in place in which students from the two target schools were receiving services from them. Based on an already established partnership, CCC agreed to take on willing bridge students to provide the college mentor aspect. CCC made contact and established a relationship with willing bridge students prior to the end of the program. CCC continues to monitor

student enrollment in college, contact them a few times a semester, and offer assistance in registering for classes and FAFSA/TASFA completion.

Demographic Representation of the Bridge Program

The demographics of the district and the state in comparison to bridge students indicated that overall bridge participants had a population that had a greater percentage of students from underrepresented populations (in this case Hispanic) and a greater percentage of economically disadvantaged students. When narrowing to target schools, the Hispanic population was somewhat similar, with 78.3% and 88.7% for School A and School B, respectively, compared to 88% for the bridge program. Based on the Chi-Square analysis for ethnicity, a statistical difference was found due to the overrepresentation of Hispanics in the bridge program. Since underrepresented populations (in this case, Hispanic) were those targeted for the summer bridge program, the overrepresentation indicates that targeting worked.

Students in the bridge program tended to be more economically disadvantaged compared to the target schools, with 92.0% for the bridge program, 72.8% for School A, and 84.4% for School B. The Chi-Square analysis for economically disadvantaged found no statistical difference in the bridge participants compared to the nonparticipants. Economically disadvantaged students also served as a targeted population for the bridge program. In this case, so much of the general populations of these two campuses are economically disadvantaged that the discrepancy in proportions was not enough to make a statistical difference. These results are desirable because the comparison of summer melt and the impact of the bridge program will be comparing groups that are not

significantly different, which can more clearly help to assess the differences and impact of the summer bridge program rather than differences in the composition of groups.

Bridge Outcomes

As discussed earlier, the students in the bridge program for the most part came from the bottom 50% of class rank and often decided to attend college sometime in their senior year. The framing of the typical bridge student is important because his or her success in college is more of a challenge than higher achieving students. Green and Forester (2003) found that only 32% of graduates overall were considered college ready. Among Hispanics, only 16% were considered college ready. Students' GPA at the end of the program is one good indication of how college ready the students were after the bridge program. Students in both the drawing class and foundations class (78% of students) achieved an A or B. These grades also culminated in 78% of students having a GPA of 3.0 or higher. The ethnic distribution by grade performance indicates strong performance among all ethnicities represented. Hispanic students are 43 out of 49 (87.8%) of the students who received a grade of A or B. They have the lowest average (3.09), but this is still a good GPA. Among economically disadvantaged, the number of students in this category is large, with 43 out 49 (87.8%). The average GPA for economically disadvantaged students was 3.17. Although there was very small representation of non-economically disadvantaged students (only three students), it is interesting that their average GPA (2.67) was lower than economically disadvantaged students. These grades further indicate the positive impact this program had on students who are Hispanic and/or economically disadvantaged. The possibility of them to also be

college ready is also stronger, with successful completion of the two courses for a total of six credits earned.

District Summer Melt

Castleman and Page (2014) describe summer melt as students who have been accepted to and intend to enroll in college upon high school graduation but do not attend. This study defines summer melt somewhat differently but for a good reason. Summer melt for this study is measured by student intention in enrolling in college (as measured by the graduation survey) and then not attending anywhere in the fall. The reasoning behind broadening this definition has to do with the population of study. If the researcher were to calculate the summer melt rate of students who went through the college application process and were accepted prior to high school graduation, most of the students that need targeted services in the summer would not be included. Most of the students who intend on enrolling in the local community college do not do so until the summer. Other than being able to select courses for the fall at an earlier point in time, there is no impetus to apply and enroll in college prior to high school graduation. The college is open enrollment and the deadlines for fall enrollment do not need to be addressed until late July for attendance. A partial reason for the decrease in summer melts identified among the students in this research study could be that students had help and resources available to navigate the enrollment process in the spring rather than attempting enrollment alone in the summer.

In the analysis of district summer melt, evidence for the rationale behind the broadening definition can be seen. The calculation of summer melt began with the entirety of the Class of 2013 graduates (N=1991). The students of study narrowed to

those who completed the survey so a measure of intention could be utilized (N=1694). The survey asks for contact information and local student ID. In some cases, this was illegible or not included, so those students had to be eliminated, which brought the number of cases down to 1,676. Once this group had been narrowed, the students were coded into five categories. The first category was students attending where they stated they would go. This was the largest category, with 53.3%. The next category was a small group of students (6.7%) attending an IHE, but not where they intended to go. These students are not considered a part of summer melt because they had a change in plans, but they still enrolled in an IHE, which is the ultimate goal. Two smaller categories that were not considered summer melt were "said they would not attend college and did not attend" (5.3%) and "said they would not attend college but did attend" (1.3%). The last category and the second most prevalent category was the summer melt category. The category listed as students "who did not attend college but said they would" made up 33.2%, or 557 students. This group made up the students who became part of the further analysis.

The next step was to examine who were the students who made up this summer melt category. When examining ethnicity, the largest percentage was Hispanic, with 50.8%, and then African American, with 47.9%. Among economically disadvantaged, 50.9% experienced summer melt compared to a rate of 16.9% for non-economically disadvantaged. The Chi-Square analyses that followed this analysis indicated that there is a significant difference among ethnicities and among economic status in terms of who enrolls in higher education and who does not. These results are in agreement with Radford and Tassoff (2009) and Radford et al's (2010) findings that minority and low-

income populations are the least likely to enroll in higher education. These results lend to the question: Is summer melt a problem for everyone or is it mainly among the underrepresented populations? It appears that the problem occurs with everyone, but the disproportionately large percentages that occur among underrepresented populations create the need for interventions rather than just problem solving. Among students who are not economically disadvantaged, the summer melt rate for many of the IHEs is around 10%–20% in this district. These results are similar to the findings by Castleman and Page (2012), with the overall rate of summer melt being 20% and the summer melt rate for economically disadvantaged students being 40%. To borrow one of Castleman and Page's titles, a trickle of summer melt requires a patch, such as a conversation with students. A torrent of summer melt is what is being experienced between the local community college and the target schools, and an effective intervention is required to remediate it.

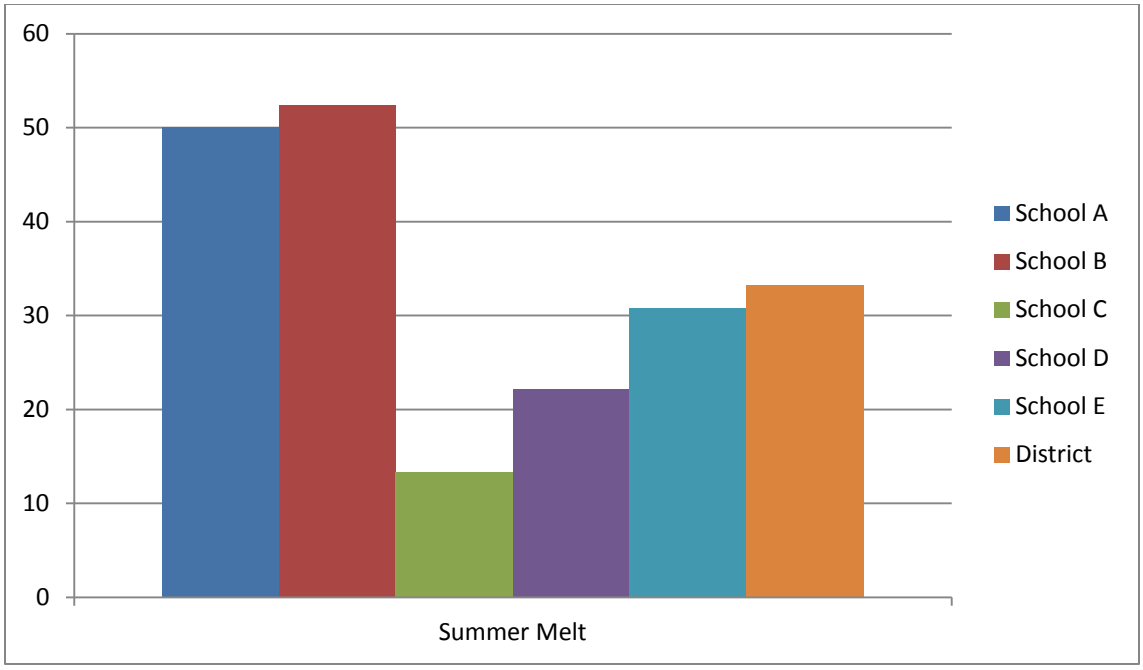
Fall Enrollment and Summer Melt among Target Schools

In addressing the need for intervention to remediate summer melt, the local community college quickly becomes the area of first focus. Ninety students from the two target high schools attended the local community college in the fall, which is the largest percentage among all IHEs. Of those who attended from the bridge program, their enrollment status was found to be insignificant; which means once students enrolled in the fall, their decision to attend full time, part time, or less than part time was somewhat similar or more balanced across the group. Adelman (2006) found that students who earned 20 college credit hours by the end of their freshman year in college had good

momentum to persist to college graduation. Due to the low number of full-time status students, this may be an indicator that non-bridge and bridge students all may be lacking proper momentum to help ensure college completion. It should be noted that these 90 students are the students who attended the local community college based on bridge status and does not include intention, which would narrow the group.

In conducting the same filtering of data to measure summer melt at the district level, students were categorized in the same previous categories for schools A and B and the students who attended the summer bridge program. The students who attended where they said they would number 235 out of 733, or 32.1%. The district level was 53.3%, which indicates that these two target campuses contributed less to the students who follow through with plans compared to the other district campuses. This really becomes apparent in the summer melt category, with 373 out of 733, or 50.9%, falling into this category. Looking back at the district results, 33.2% of district students experienced summer melt, which means the students from the two target high schools overly contributed to it and may be where the majority of students are experiencing this problem. Figure 9 shows the summer melt rates overall and by campus. School A and B are the target schools of this study.

Figure 9. Summer Melt Rate Overall for School District and by Each School



When narrowing down to the two target high schools and the local community college, it becomes readily apparent that the students intending to enroll at the local community college contribute to the bulk of the melt rate for these two schools. Between the two schools, 217 out of 733 (29.6%) intended to enroll in the local community college, but only 48 out of 217 (22.1%) attended. These students represent a very large percentage of the melt for the two target schools and a notable percentage at the district level of potential college students that the district is losing between high school graduation and fall enrollment. Of the 48 students who attended the community college, 12, or 25%, of them were bridge students; and 36, or 75%, were non-bridge. When conducting the Chi-Square analysis, this translates into a significant difference among bridge and non-bridge students in the two target schools. In other words, this shows that summer bridge made an impact overall for students who planned to attend community

college. These findings are consistent with the findings that bridge programs have been found to improve the persistence in attending students (Ackermann, 1991; Garcia, 1991; Gold, Deming, & Stone, 1992).

The next step was to examine bridge impact by ethnicity. Due to the small number of students in both the bridge program and non-bridge, all ethnicities except Hispanic were grouped together as non-Hispanic. Among those who attended the local community college in the fall and attended the bridge program, 11 out of 26 (42.3%) students were Hispanic and 15 out of 26 (57.7%) would be considered non-Hispanic. The Hispanic students who did not attend the bridge program and did attend college represented 35 out of 166 (21.1%), and the non-Hispanics who did not attend the bridge program encompassed 131 out 166, or 78.9%. These results indicate through Chi-Square a significant difference overall among ethnicity when considering fall attendance. The significance remains when looking specifically at bridge attendance, with non-bridge participants showing a significance difference in attendance compared to overall. The bridge participants were not significantly different, which implies in practical terms that the bridge program leveled the field for these students to where they perform and enroll similarly to the overall population who attend the local community college.

Economically disadvantaged status shows a similar story. Eleven out of 25 (44%) of economically disadvantaged bridge participants attended in the fall in comparison to 11 out of 142 (7.7%) among economically disadvantaged non-bridge participants. This discrepancy is larger than it is for Hispanic and non-Hispanic, which may indicate a larger impact. The Chi-Square analysis found the difference between economic status and fall enrollment to be statistically different. When examining the bridge program, the

difference among the non-bridge students who are economically disadvantaged is significant. The results are not significant, which again suggests a leveling of the playing field for the economically disadvantaged population, to the point where they are statistically similar to the general population that attends the local community college.

Limitations and Need for Future Research

As with every research study, there are limitations and need to conduct further research. One limitation of this study is the data only includes data from one school district and might not be representative of other school districts' graduates or their college attendance. In order to confirm the conclusions of this study, multiple studies replicating this methodology needs to occur. This research could also benefit from a longitudinal research design of this research district to ensure that the results of this study are representative of this school district and not a class anomaly.

The study is also limited in the reasons why these students do not attend their intended college. The data collected can only point to the characteristics of these students. Qualitative data collection that can better demonstrate the reasons students melt in the summer will assist in informing researchers and practitioners on how to prevent this phenomenon. Qualitative analysis can also better inform practitioners on the impact of the summer bridge program and the availability of social services during this program. The wraparound services provided by the bridge program served as a complex web of support that makes it difficult to capture the impact by survey or measurement of college persistence alone. Finally, the study is limited in that college of intention is based on a survey item that may or may not be a reliable indicator of students' actual intentions of

college attendance. A psychometric analysis of the reliability and validity of the survey items used in this study are needed.

Conclusion

The literature suggests that bridge programs mainly encompass underrepresented populations and shows that the impact of bridge programs is dependent on the programs being well thought out and intentional in the services provided. What appears to be lacking in the literature is the connection between summer bridge programs and their impact on summer melt. As discussed earlier, summer melt analysis is a relatively new research field. The newer interventions highlighted in this literature discuss promising practices such as near-peer mentoring and 2-hour counseling sessions, which appear to positively impact summer melt numbers (Daugherty, 2012; Castleman & Page, 2013).

Summer bridge programs, on the other hand, have been around for decades and show everything from the long-lasting impact on persistence and GPA, the short impact that becomes negligible as students matriculate, and sometimes little to no impact (Cabrera, Miner, & Milem, 2013; Barnett et al., 2012, Allen & Bir, 2012). The literature on summer bridge impact on summer melt appears not to exist. There seems to be a leap of faith that concludes that because students attended the summer bridge program, they also attended in the fall. The literature may discuss that a certain number of students did not attend after the bridge program, but they do not appear to discuss who these students are to see what could be the root of the problem—the underlying reasons for summer melt could be ferreted out. Current research on summer bridge research glosses over the underlying variables related to summer melt.

This research study attempts to connect summer melt and summer bridge and demonstrates that a summer bridge can be an effective intervention in response to summer melt. The results indicate that for Hispanic students and economically disadvantaged (many who fall into the same category), this appears to be a promising intervention. It is difficult to discern if it is the attendance of class over a long summer period; the ability to take class in a familiar environment with supportive staff; or the initial assistance with enrollment, registration, and FAFSA completion that impacted the bridge students the most. The literature suggests that it may be all of these factors working together. An organized support structure is necessary to support students to translate their intention of going to college into successful college attendance the subsequent fall. Clearly it takes a coordinated and consistent effort by many stakeholders to support the college-going activities of students who are the most at risk of melting during the summer months.

References

Ackermann, S. P. (1991). The benefits of summer bridge programs for underrepresented and low-income transfer students. *Community/Junior College*, *15*(2), 211–224.

ACT. (2011). *The condition of college and career readiness 2011 report*. Iowa City, IA: Author.

Adelman, C. (2004). *Principal indicators of student academic histories in postsecondary education, 1972-2000*. Washington, DC: US Department of Education.

Adelman, C. (2006). *The toolbox revisited: Paths to degree completion from high school through college*. Washington, DC: US Department of Education**.**

Advisory Committee on Student Financial Assistance. (2001). *Access denied: Restoring the nation's commitment to equal educational opportunity.* Washington, DC: US Department of Education.

Allen, D.F., & Bir, B. (2011–12).Academic confidence and summer bridge learning communities: Path analytic. *J. College Student Retention, 13*(4), 519–548.

Avery, C., & Kane, T. (2004). Student perceptions of college opportunities: The Boston COACH program. In M. Hoxby (Ed.), *College choices: The economics of where to go, when to go, and how to pay for it*. Chicago, IL: University of Chicago Press.

Barnett, E. A., Bork, R. H., Mayer, A. K., Pretlow, J., Wathington, H. D., & Weiss, M. J. (2012). Bridging the gap: An impact study of eight developmental summer bridge programs in Texas. *National Center for Postsecondary Research*.

Cabrera, N.L, Miner, D.D., & Milem, J.F. (2013). Can a summer bridge program impact first-year persistence and performance? A case study of the new start summer program. *Researching Higher Education, 54*, 481–498.

Castleman, B.L., Arnold, K., & Wartman, K.L. (2012). Stemming the tide of summer melt: An experimental study of the effects of post-high school summer intervention on low-income students' college enrollment. *Journal of Research on Educational Effectiveness, 5*(1),1–17.

Castleman, B.L., & Page, L.C. (2012). *The forgotten summer: Does the offer of college counseling the summer after high school mitigate attrition among college-intending low-income high school graduates?* Paper presented at the Association for Education Finance and Policy 2012 Annual Conference.

Castleman, B. L., Page, L. C., & Schooley, K. (2013). *The forgotten summer: The impact of college counseling the summer after high school on whether students enroll in college.* Annual Meeting of the Association for Public Policy Analysis and Management.

Castleman, B. L., & Page, L. C. (2014). A trickle or a torrent? Understanding the extent of summer "melt" among college-intending high school graduates. *Social Science Quarterly, 95*, 202–220. doi: 10.1111/ssqu.12032.

Cobb, J.P. (2013). *Senior intentions: High school graduates college attendance compared to their graduation survey responses*. (Unpublished doctoral candidacy) University of Houston, Houston, Texas.

Congressional Digest (2009). Higher education barriers: Income, costs, and the current financial system. *Congressional Digest*, November, 262–266.

Cooper, M.A. (2012).High school students not prepared to face tuition hikes. *The Hispanic Outlook in Higher Education, 22*(15), 50–51.

Daugherty, L. (2012). *An evaluation of summer link, a counseling program to facilitate college-going.* Paper presented at the Annual Meeting of the Association for Public Policy Analysis and Management, Washington, DC.

Ekstrom, R. (1991).*Attitudes toward borrowing and participation in post-secondary education*. Paper presented at the annual meeting of the Association for the Study of Higher Education, as cited by Laura W. Perna in *Impact of student aid program design, operations, and marketing on the formation of family college-going plans and resulting college-going behaviors of potential students,* The Education Resources Institute, 2004.

Garcia, P. (1991). Summer bridge: Improving retention rates for underprepared students. *Journal of the Freshman Year Experiences, 3*(2), 91–105.

Gold, M., Deming, M. P., & Stone, K. (1992). The bridge: A summer enrichment program to retain African-American collegians. *Journal of the First-Year Experience & Students in Transition, 4*(2), 101–117.

Greene, L.P., & Forster, G. (2003). Public high school graduation and college readiness rates in the United States. *Manhattan Institute for Policy Research,* September.

Hahn, R.H., & Price, D. (2008).*Promise lost: College qualified students who don't enroll in college.* Washington, DC: Institute for Higher Education Policy.

Haras, C., & McEvoy, S.L. (2005), Making the bridge: Testing a library workshop for a summer bridge learning community. *Research Strategies, 20*(4), 257–270.

Hayes, W.D. (1999). A naturalistic investigation of first-generation college graduates: From alienation to empowerment. *Dissertation Abstracts International, 61*, 2144.

Hooker, S., & Brand, B. (2010). College knowledge: A critical component of college and career readiness. *New Directions for Youth Development, 127*, 75–85.

Hoover, E. (2009). In an uncertain summer, colleges try to control enrollment 'melt.' *Chronicle Of Higher Education, 55*(42), A22.

Horn, L., Chen, X., &Chapman, C. (2003). *Getting ready to pay for college: What students and their parents know about the cost of college tuition and what they are doing to find out.* US Department of Education, National Center for Education Statistics.

Ikenberry, S.O., & Hartle, T.W. (1998). *Too little knowledge is a dangerous thing.* Washington, DC: American Council on Education.

Ishitani, T. (2005). *Studying educational attainment among first generation students in the United States.* Paper presented at the annual forum of the Association for Intuitional Research.

Jiang, Z., Doverspike, D., Zhao, J., Lam, P., & Menzemer, C. (2010). High school bridge program: A multidisciplinary STEM research program. *Journal Of STEM Education: Innovations & Research, 11*(1), 61–68.

Kallison Jr., J. M., & Stader, D. L. (2012). Effectiveness of summer bridge programs in enhancing college readiness. *Community College Journal of Research and Practice, 36*(5), 340–357.

Long, B.T. (2007).Financial aid: A broken bridge to college access? *Harvard Educational Review, 77*(1), 39–63.

McCarron, G., & Inkelas, K. (2006). The gap between educational aspirations and attainment for first-generation college students and the role of parental involvement. *Journal of College Student Development, 47*(5), 534–549.

McCurrie, M.K. (2009). Measuring success in summer bridge programs: Retention efforts and basic writing. *Journal of Basic Writing, 28*(2), 28–49.

Niu, S., & Tienda, M. (2013). Delayed enrollment and college plans: Is there a postponement penalty? *The Journal of Higher Education, 84*(1), 1–26.

Perna, L. (2004). *Caught in the financial aid divide, survey conducted for the Sallie Mae fund*. Tomás Rivera Policy Institute, University of Southern California.

Perna, L. W., & Titus, M. (2004). Understanding differences in the choice of college attended: The role of state public policies. *Review of Higher Education, 27*, 501–526. doi:10.1353/rhe.2004.0020.

Post, D. (1990). College-going decisions by Chicanos: The politics of misinformation. *Educational Evaluation and Policy Analysis*, *12*, 174–187.

Radford, A.W., Berkner, L., Wheeless, S., & Shepherd, B.(2010). *Persistence and attainment of 2003-04 beginning postsecondary students: After 6 years* (NCES 2011-151).US Department of Education, National Center for Education Statistics.

Radford, A. W., & Tasoff, S. (2009). *Web tables: Choosing a postsecondary institution: Considerations reported by students*. *NCES Report No. 2009-186*. US Department of Education, National Center for Education Statistics.

Roderick, M., Nagaoka, J., & Coca, V. (2008).*From high school to the future: Potholes on the road to college.* Chicago, IL: Consortium on Chicago School Research, University of Chicago.

Stolle-McAllister, K. (2011). The case for summer bridge: Building social and cultural capital for talented black STEM students. *Science Educator*, *20*(2), 12–22.

Strayhorn, T. L. (2011). Bridging the pipeline: Increasing underrepresented students' preparation for college through a summer bridge program. *American Behavioral Scientist*, *55*(2), 142–159.

US Department of Education, National Center for Education Statistics. (2012). *Digest of Education Statistics, 2011* (NCES 2012-001). Retrieved from http://nces.ed.gov/fastfacts/display.asp?id=76

US Department of Education, National Center for Education Statistics. (2001). *Postsecondary education quick information system: Survey on remedial education in higher education institutions* [Data table]. Retrieved from http://nces.ed.gov/surveys/peqis/inc/displaytables_inc.asp

US Department of Education, National Center for Education Statistics. (2011).*Recent high school completers and their enrollment in 2-year and 4-year colleges, by sex: 1960 through 2010.* [Data file]. Retrieved from http://nces.ed.gov/programs/digest/d11/tables/dt11_209.asp

US Department of Education, National Center for Education Statistics. (2003). *Remedial education at degree granting postsecondary institutions in fall 2000.* Washington, DC: US Department of Education.

Wathington, H. D., Barnett, E. A., Weissman, E., Teres, J., Pretlow, J., & Nakanishi, A. (2011). Getting ready for college: An implementation and early impacts study of eight Texas developmental summer bridge programs. *National Center for Postsecondary Research*.

Wimberly, G. L., & Noeth, R. J. (2004). *Schools involving parents in early postsecondary planning*. Iowa City, IA: ACT Policy Research Center.

Appendix

Steps for Enrollment in Summer Bridge

STEPS FOR SUMMER BRIDGE PARTICIPATION

The following are steps that must be completed by summer bridge participants prior to the summer bridge program in the Summer of 2013.

- Step 1 - Complete Summer Bridge application
- Step 2 - Complete Community College application
- Step 3 - Complete FAFSA/TASFA application
- Step 4 - Receive or provide proof of updated Meningitis shot
- Step 5 - Provide proof of exemption or take TSI (COMPASS) test for course placement.
- Step 6 - Attend two hour pre-enrollment session