TESTING STUDENT SUCCESS DATA
FINDINGS AND RECOMMENDATIONS

Executive Summary

In 2016, with funding from Lumina Foundation, the Higher Learning Commission (HLC) began a process of defining and measuring student success with a multi-faceted approach. The overarching purpose of the Initiative is to shape the development of HLC's evaluation of student success outcomes. HLC has convened two groups of higher education leaders with a range of perspectives to jointly explore the overall objective of developing, testing, and subsequently adapting variables and measures for evaluating student success outcomes. One group (the subject of this paper) was identified as the Testing Student Success Data Initiative to conduct quantitative research for student success. The second group, identified as the Defining Student Success Data Initiative, created a qualitative study for institutional success and accountability. This paper reflects the outcomes of the Testing Initiative.

The goals of the Testing Initiative were to:

- Establish data points to be researched and tested relative to student success variables (e.g., Carnegie classification, student headcount, graduation rate, etc.);
- Identify testing parameters to measure student success by institution type;
- Agree on which institution(s) will test which variable(s).

For the Testing Initiative, HLC selected representatives from 18 member institutions to work with researchers to identify what variables help to answer the question, "Why do students not succeed?" and devised a plan to test select variables as measures of student success.

The size and characteristics of the student populations in each study varied significantly among institutions. The sample sizes ranged from N=15 at one institution, where data was collected from a small, piloted program, to N=1,452 at another, where data for graduation and transfer rates were aggregated. The assessments and measures of each institution varied based on the goal of the institution and the means by which the researchers were able to collect and analyze the data.

Most institutions used surveys to collect information on the opinions and circumstances of their students; many also used retention, persistence, and graduation rates, as well as GPA and final grades as outcome measures for their analyses. The Testing Initiative found that each institution measured success differently, which is remarkable in that it demonstrates the diversity of these student populations. Based on size, format, program length and more, the analyses and outcomes varied immensely between institutions, compelling researchers to ask, "Why do students not succeed?" while also raising more questions about success at institutions across the United States.

Group A: Accounting for Various Student Goals

Including the use of future enrollment/persistence data such as the National Student Clearinghouse Data

Institutions in Group A considered how they may account for personal circumstances in supporting their students. Part of that included considering what role the institution plays in creating barriers to success. While the traditional variables (e.g. finances, employment status) were considered, student intent surfaced as a new variable in determining outcomes.

Group A identified a difficulty that institutions face in enforcing federal policy regarding financial aid eligibility; students are ineligible for federal financial aid if they do not declare a major. Research has shown that declaring a major increases the likelihood of persistence, yet institutions struggle with the knowledge that some students are selecting a major to secure the financial aid to attend college when they have no intent on completing a degree. Group A found that generally, a significant amount of the students who are labeled as "degree seeking," did not actually intend on graduating.

Additionally, student goals, such as finishing a class or graduating, may be significantly impacted by personal and financial struggles, such as food insecurity. Student circumstances may greatly impact "success rates" as defined by the institution. For instance, only about a quarter of students who took remedial courses at one institution had transferred to any program (2-year or 4-year) within 4 years, whereas half of students who did not take any remedial courses had transferred within 4 years.

Group A Recommendations:

- Formally expand the definition of student success to include students with varying educational intent and/or needs, such as single course, certification, transfer, or full program completion.

- Encourage and incentivize students to enroll full-time, and reduce the number of students enrolled in remedial/developmental courses.

- Make graduation more accessible and less expensive (e.g. remove a graduation fee, only charge students a small amount if they wish to walk).

- Support students' needs inside and outside of the classroom, such as ensuring students enduring financial hardship and/or food insecurity have access to resources.

Group B: Accounting for Various Student Goals Within the Context of Personal Circumstances

Considering the Most Vulnerable Populations in an Institution

Group B addressed the term "at-risk" at great length, acknowledging that it is an inherently complex and ever-changing profile. Understanding students who are at-risk was believed to hinge on giving them the opportunity for their voice to be heard. Respecting the power of predictive analytics, Group B stressed that the student experience needs to be contextualized.

When exploring different success measures, Group B found troubling results, particularly for students of color. The retention rate for the students who identified as Hispanic, black, or as being of two or more races was nearly 15 percent lower than students who did not. When exploring the cohort of students of color, Group B found that nearly one-third of the total cohort had a GPA at least one full letter grade lower than their high school GPA. A significantly larger share of students of color fell into this category. Group B then flipped the variables around and discovered they could identify "success variables" if they set limitations for each individual variable. For instance, if a student achieved a first term GPA within a point or better of their cumulative high school GPA; stayed within a credit or better of being on track for graduation; and/or had a medium or high sense of financial security, their first-term retention rate was above 85 percent. Unfortunately, these rates still differed significantly among racial groups. Group B intends to investigate this further.

Another institution in Group B reviewed quantitative as well as qualitative data on their students of color and their experiences in their institution, and the results uncovered differences between the college expectations and pre-college experiences of their students. Even before beginning their classes, students of color were more likely to consider transferring to other institutions. They also had higher expectations of student/faculty

interaction than other students. In interviews, students of color also expressed feelings of isolation and pressure to succeed, negative experiences in group assignments, particularly because others seemed not to value their perspectives, micro-aggressions, and tokenism.

Group B Recommendations:

- Listen to students and let them contextualize their lives and circumstances. Listen particularly to those students in marginalized groups that are often underrepresented in college faculty, staff, and leadership.

- Pinpoint the interventions that help vulnerable populations specifically and prioritize supporting those interventions. Campus administration should support underprepared students with the implementation of learning communities, first-year cohorts, and other supportive systems.

- Identify financial aid need in students and communicate that need to the students in language attainable to them. Create this dialog even in cases where the student is unaware that they have any particular need.

Group C: Misalignment of Goals

Accounting for differences between student intent and institutional goals

In attempting to differentiate between institutional and student success, Group C also found intent to be an important variable. When using existing definitions of success, those based on traditional metrics that may not account for the goals of the student, institutions that are helping the student meet their goals may appear to fail based on traditional metrics. Institutions in Group C were concerned about the message that such measurements send to students about what qualifies as "success" and the lasting effect that this incongruence in definitions could have on their students' efficacy.

Group C argued that institutions should consider a number of reasons why a student might leave. They use the terms "drop out," "stop out," and "job out" to describe various reasons for departure. Others defined success as earning a certificate, degree or transferring to a four-year institution, and persistence as completion, transferring or continued enrollment at any other higher education institution (not just the institution performing the study). They found that taking at least one "guaranteed transfer" course was the strongest predictor of positive outcomes among their students.

Group C also analyzed GPA as a predictor variable and found that, with all other established variables being equal, a student with a 3.50 GPA was five times more likely to remain in school for at least two years than a student with a GPA of 2.50. Additionally, students who entered college with Advanced Placement or concurrent enrollment credits were more likely to be retained than those who arrived without college credits. Group C also found that high school GPA was more predictive than ACT scores in retention and college GPA. When looking at classroom format (online vs. face-to-face), students who completed 30 percent of their coursework online were more than twice as likely to be retained. Additionally, the group also considered success and how that differs by major and other choices. For instance, in one program, students in the nursing major had higher retention rates than all non-traditional programs while business students retained significantly less.

Group C Recommendations:

- Determine specialized intents and goals by measuring an institution's own student population, as opposed to using a universal definition of success.

- Increase the frequency and variability of student success evaluations - considering that the current measure of success is IPEDS 2015 data which includes a cohort of students who attempted college in the last decade and only includes those who are "first-time, full-time." Increased evaluations will lead to advanced monitoring and correction among localized programs as well as campus-wide initiatives.

- Expand, replicate, and modify HLC Academy efforts to include institutions showing tremendous improvement as exemplars and facilitators.

- Consider the importance of disaggregating results by student type and intent when assessing programs for success.

Group D: The Tensions between Accountability and Improvement that arise within an institution

As with the other three groups, institutions in Group D identified the value in understanding difference, particularly differences that may exist in the preparation and goals of their students, and how those variables reflect on institutional performance. Pointing out the wide-array of institutional types in the room, the variations in their mission, and the make-up of their unique student populations, this group called attention to the fact that success for one student or one institution will not necessarily equate to success for another. Similarly, the way to confront and increase success for students differs by institution, and therefore institutions must work to increase transparency in their expectations of faculty and staff and their measures of accountability and success from their employees.

When one institution in Group D investigated how faculty and staff specifically could help support students, they found that students needed two main support functions: first, the students needed the faculty and staff to see them outside of the classroom experience; second, students needed to know that the faculty and staff listened to them and supported them through the challenges of life and school. With these two functions, the students felt they would thrive, leading to stronger success, persistence, and completion. The simple phrase emerging from this group was, "see me, hear me."

Additionally, Group D emphasized that institutions need to collect retention and completion rates and set ambitious but attainable data-based goals that are appropriate to the mission of the college and to student populations. They also argued that disaggregating data for various student populations of interest (i.e. Hispanic students in a Hispanic-serving institution; first generation students in many 4-year degree programs) allows institutions to identify patterns that may differ across groups and begin to understand differential participation in and impacts of campus programs. One college in the group also discovered that in an attempt to raise success rates in their students, they were also able to raise participation rates of faculty in a new initiative that the college had taken on, shedding light on how institutions can increase cooperative work among the college's main internal stakeholders.

Group D Recommendations:

- Listen to and assist students when they need it most (hear them) and attend and support them in events outside of the classroom (see them).

- Integrate faculty into discussions of improvement of campus outcomes as well as curriculum and instructional improvement.

- Define and provide ways that improvements will be integrated and accomplished on campus.

- Incorporate technology that allows faculty and advisors to work with students to establish a plan of study and assess the use of such technology in predicting success.

- Poll faculty and staff directly to see how they might want to get involved with campus initiatives, increasing buy-in from faculty and staff.

- Directly relate all improvement missions to student success and emphasize this point with internal stakeholders in order to improve efforts of accountability.

Introduction

In 2016, with funding from Lumina Foundation, HLC began a process of executing a multi-faceted approach to defining and measuring student success. HLC selected representatives from 18 institutions to identify what variables help to answer the question "Why do students not succeed?" and devised a plan to test select variables as measures of student success. The representatives met as a group on September 7–8, 2017, to discuss and plan research to meet their goal. Many institutions identified similar motivations for their involvement in this project. A number of institutional representatives said that they were participating in this initiative because of their own graduation rates and the difficulties they have experienced improving them. Others felt a graduation rate is not an ideal measure of institutional effectiveness and/or student success, and were interested in exploring alternative or additional ways to define and measure the success of their unique student populations. The representatives also agreed that the measures used by IPEDs were inaccurate and incomplete. Likewise, a few institutions mentioned that they saw this work to be in alignment with their own institution's strategic plans.

The traditional measures of success were identified as the biggest challenge institutions face in measuring and communicating their students' achievements. Participants hoped to identify measures that were more reflective of student intent, institutional mission, and today's student's true path to completion. In addition, institutions discussed the challenge of having inconsistent definitions of traditional measures—with campus, state, and federal policy differing in the indicators they use to determine how institutions are performing related to agency-specific goals. In preparing data for all reporting and compliance-related requirements, institutional representatives noted that their ability to access useful and complete data may be limited due to data being stored peripherally or in a complex system that is difficult to navigate.

Looking at the challenges faced in measuring and improving student success, the group identified four areas of focus in their research of possible variables that influence student success outcomes.

1. Accounting for Various Student Goals, including the use of future enrollment/persistence data such as the National Student Clearinghouse Data

2. Misalignment of Goals: Accounting for differences between student intent and institutional goals

3. Accounting for Various Student Goals Within the Context of Personal Circumstances: Most Vulnerable Populations

4. The Tensions Between Accountability and Improvement

The group met again during the HLC Annual Conference on Sunday, April 8, 2018. HLC's annual conference provided the opportunity for the members of the Testing Student Success Data Initiative to share their methods and preliminary findings with each other and discuss future directions. In a facilitated session, the group discussed trends in challenges and identified promising practices to advance their work.

Methods and Results

Participants

The number and characteristics of the student participants in each study varied a great deal between institutions. The sample sizes ranged from N=15 at one institution, where researchers collected data from a small piloted program, to N=1,452 at another institution, where the data was aggregated.

Measures and Results Within Each Group

The assessments and measures of each institution varied based on the goal of the institution and the means by which the researchers were able to collect and analyze the data. Many institutions used surveys to collect information on the opinions and circumstances of their students and many also used retention, persistence, GPA, final grades and graduations rates as outcome measures for their analyses. The variability between outcome measures and analyses in and of itself speaks to the variability required in any considerations of "success" in student populations; one will find that based on size, format, program length and more, the analyses and outcomes differed immensely, giving insight to the question, "Why do students not succeed?" while also raising more questions about success in institutions across the United States.

For more detailed information about the methods used by the institutions in this study, see Appendix A: Detailed Methods.

Group A: Accounting for Various Student Goals

Institutions in Group A spent time considering how they may account for personal circumstances in supporting their students. This included consideration of the role of the institution in creating barriers to success.

While the traditional variables (e.g. finances, employment status) were on-going factors, student intent surfaced as a new variable in determining outcomes. It was identified as a difficulty that institutions face in enforcing federal policy regarding financial aid eligibility; students are ineligible for federal financial aid if they do not declare a major. Research has shown that declaring a major increases the likelihood of persistence, yet institutions struggle with the knowledge that some students are selecting a major to secure financial aid to attend college when they have no intent on completing a degree.

Using existing data that was available on intent, one institution found that nearly half of the students that began at their institution in 2017 as "degree-seeking" did not actually intend to complete a degree there.

Other institutions found a similar statistic, especially community colleges, where the intent to transfer is much more prevalent than that of graduating. Group A agreed that more data and disaggregated data is needed to better understand how intent differs by student populations.

Another institution, a two-year public, made the argument that while most community college students officially report that they are seeking a degree at their institution, many do not truly plan to graduate from that institution. Whether their intent is to earn a few credits for transfer or work-related purposes, to simply be eligible for most financial aid opportunities the student must be "degree-seeking" at that institution.

In the study, researchers attempted to look at student intent and factors affecting student graduation and transfer rates. Thus, the focus of this two-part study was to examine research questions such as: Why do students attend community college? Is student-reported intent affected by how the student is paying for college? How many years does it take a community college student to transfer and/or earn a credential? How do students differ in the above by various demographics?

The first recommendation that the researchers explored was that of including a part-time, degree-seeking cohort in IPEDS. Through their data, it became apparent

Figure 1. "Degree-Seeking" student intent for the future in a 2017 cohort at a two-year public institution
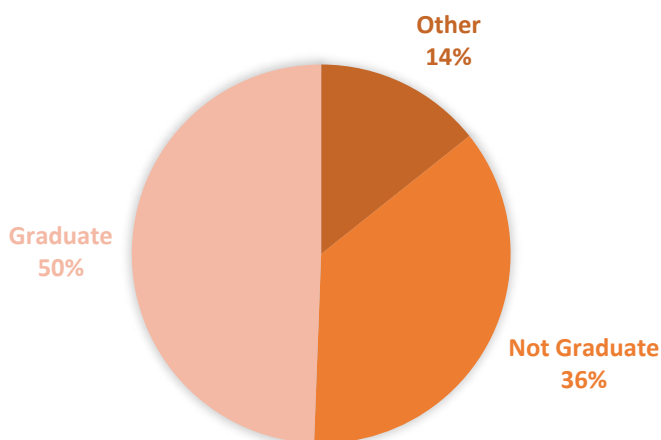
that students who attend full-time in their first fall term, regardless of whether they are full-time any subsequent term, outperform their part-time counterparts in transferring or getting credentialed. Even by year eight, the part-time student rates (21.7 percent) have not reached that of the three-year rates of the full-time students (27.6 percent) in transferring to a 4-year university.
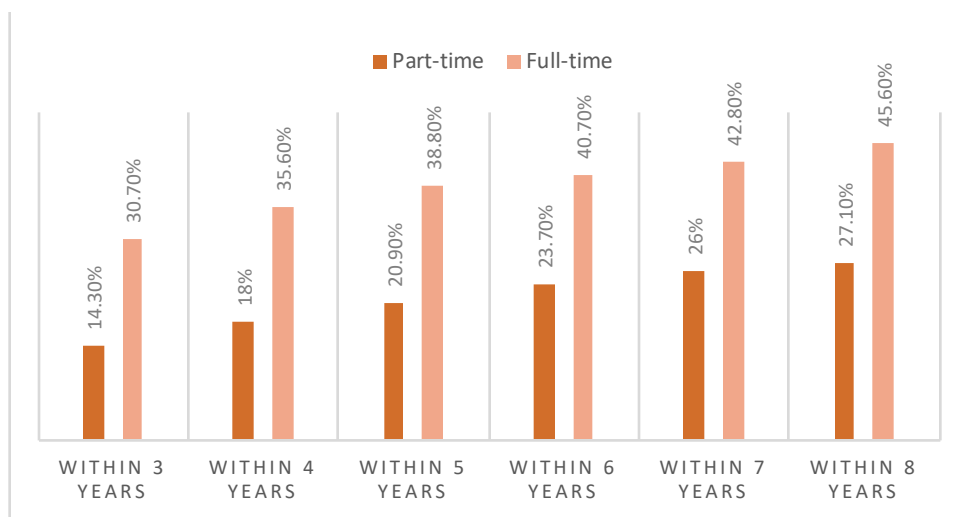
Another recommendation that the researchers investigated, originally discussed at the initiative kickoff meeting, was the ability to disaggregate current outcome measures by college-ready status. They found a large difference when comparing first-time, full-time, degree-seeking students who took remedial courses to those who did not take remedial courses.

For instance, only 28.8 percent of students who took remedial courses had transferred to any program (2-year or 4-year) within four years, whereas 50.4 percent of students who did not take any remedial courses had transferred within four years.

It is also important to note that more than twice as many students take remedial courses at many community colleges, including the one in this study, than those who do not.

Given that community colleges also serve as transfer-in institutions for students who tried university and failed, students who returned to college after a long break, and those who decide to get general education courses completed at a less expensive institution, the college also examined what would happen to outcome measures if they were permitted to include transfer-in students, not just first-time college

Figure 2. Part-time vs. Full-time Graduation Rates by years spent in the program at a two-year public institution

■ Part-time ■ Full-time

	WITHIN 3 YEARS	WITHIN 4 YEARS	WITHIN 5 YEARS	WITHIN 6 YEARS	WITHIN 7 YEARS	WITHIN 8 YEARS
Part-time	14.30%	18%	20.90%	23.70%	26%	27.10%
Full-time	30.70%	35.60%	38.80%	40.70%	42.80%	45.60%

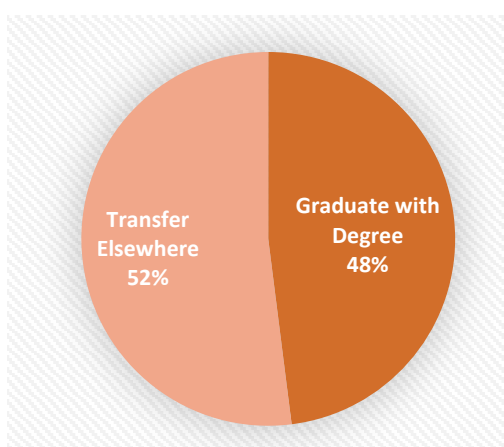students. This inclusion added around 500 students per cohort.

The data indicated that it did indeed improve the outcome measures put forth by the institution, for instance, when including transfer-in students, those that transferred or got any credential within three years increased from 32.9 percent (not including transfers) to 35.3 percent (including transfers). Each of these findings further emphasized the importance of disaggregating student data when measuring and defining success.

Another two-year public institution entered their study with the intent of examining their students' reasons for leaving school before graduating or receiving any sort of certificate, similar to other programs in Group A. This institution found that 52 percent of the "degree-seeking"

Figure 3. "Degree Seeking" student intent in a 2017 cohort at a two-year public institution

Transfer Elsewhere 52%

Graduate with Degree 48%

students initially claiming that they intended to graduate actually planned to simply complete some work before transferring.

It is also important to note the discrepancy the institution found between the data received from their students and the data that the researchers received from the National Student Clearinghouse. The researchers found that of those who did not return to school and opted to participate in the study (N=42), more than half said that they had transferred and that this was their reason for leaving, whereas the National Student Clearinghouse data for all students who left before degree completion indicated that only 27 percent had transferred. This should certainly be investigated further; perhaps some variance exists in the way the National Student Clearinghouse's methods of measurement and reporting, or perhaps the students in the institution's sample who took the time to respond could be a self-selected group, more likely to succeed and transfer to other programs.

For the researchers at a four-year public institution in Group A, the goal was to investigate new initiatives recently put into place to measure their effectiveness on various categories of "student success." Some of the initiatives included reducing remedial classes, increasing course load per semester, and dropping the graduation fee for students intending to graduate but not walk. This institution had similar findings to a previous program, that those students who took remedial courses were less likely to be successful in graduating or transferring.

Upon further investigation about degrees, the institution was able to confer additional degrees and credentials to 54 students above and beyond those sought by their graduation applications. This was approximately an 18 percent increase in the graduation rate from the typical ~300 students who graduate.

Most of these students were eligible to receive these credentials prior to Fall 2017 but did not apply to graduate. The reasoning for not applying varied from lack of awareness that the requirements for the credential were complete to the actual end goal of the student being attainment of a higher-level degree. By removing the graduation fee, the program was able to award more degrees than in any previous year.

Financial constraints are commonly cited as a leading barrier to success among students all over the country. This rang true particularly at one of the two-year public institutions in Group A. The implementation of multiple initiatives by the college to reduce the financial stress faced by students prompted researchers at the institution to ask whether the reception of financial aid positively impacted student success as measured by graduation rate.

The key finding of this research was that for the students they investigated, while there was an increase in graduation rates where those students who received financial assistance graduated at a higher percentage (42.3 percent) than those not receiving financial assistance (37.1 percent); financial assistance was not a significant predictor of graduating within 150 percent of normal time in a logistical regression run.

In other words, receiving financial assistance did not make a student significantly more likely to graduate, considering other factors, than if he or she did not receive financial assistance. Two limitations to this study were that there was no reliable control group for the sample of students who did not receive financial aid and that other measures of student success were not considered in addition to graduation rates.

Further analysis will help determine more clearly any effect of financial aid on success rates. A previous institution in

Group A found that increasing the acceptable graduation time from three to four years at a community college significantly increased graduation rates, which is a shift this institution could consider as well. Perhaps students receiving financial aid are doing so because they have additional responsibilities and financial burdens and therefore may benefit substantially from an increase in the expected graduation rate timeframe.

In addition to their findings about financial aid, the institution also learned that regardless of financial assistance, the following demographics had an impact on student graduation rates: females were found to be 37.7 percent less likely to graduate than males; students with documented disabilities were 38.6 percent less likely to graduate than students without disabilities; and students who received scholarships were 2.7 times more likely to graduate than those who did not.

At a different two-year public institution, researchers attempted to identify variables important for within-semester retention of community college students in introductory courses. One thing in particular that the group investigated was the link between financial hardship as measured by food insecurity and the ability of the student to finish a class and persist into the next semester or year. In online classes only, 94 percent of food secure students completed successfully whereas only 58 percent of food insecure students completed successfully ($p<.05$, Phi=.427); the face-to-face control class was not significant ($p=.49$).

Additionally, when looking at future retention and persistence rates of these students, researchers found that significantly more students who were food secure persisted for two semesters beyond the original class taken (74.2 percent persisted) as compared to the students who were food insecure (only 44.8 percent persisted, $p<.05$).

The findings from all of the institutions involved in the group investigating the impact of various student goals on graduation rates and future enrollments speak not only to future goals but also to the reality that the goals of vulnerable populations are similar to those of other groups, but are unattainable due to associated obstacles. This leads to the second group of institutions in the study, who examined the impact that attempts at measuring student success have on vulnerable populations.

Figure 4. Success in Food Secure vs. Food Insecure students as measured by passing a class with an A, B, or C and by persisting 2 semesters beyond the original class at a two-year public institution
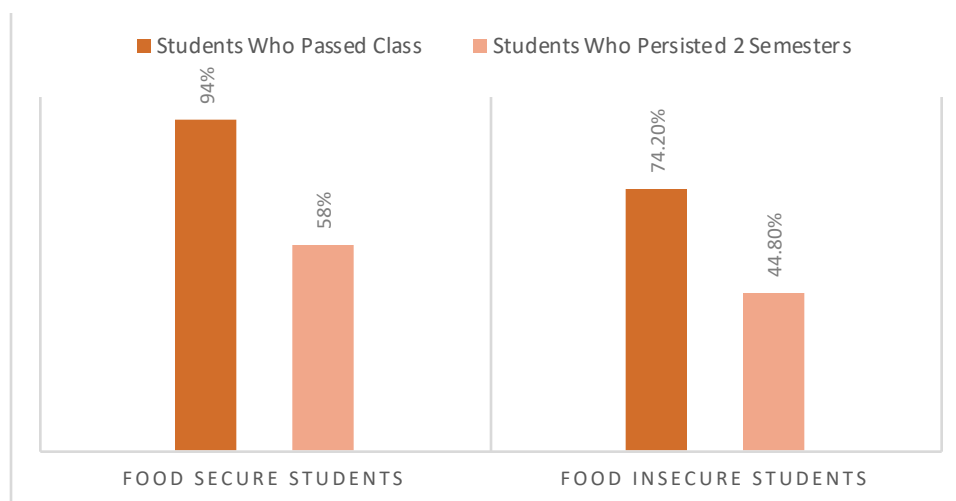
Group B: Accounting for Various Student Goals Within the Context of Personal Circumstances

The term "at-risk" was discussed at great length by this group, acknowledging that it is an inherently complex and ever-changing profile. Understanding students that are at-risk was believed to hinge on giving such students the opportunity for their voice to be heard. Respecting the power of predictive analytics, the institutions in Group B stressed that the student experience needs to be heard and contextualized. Furthermore, as the student population and their environments evolve, analysis of student data, particularly intent, ought to be continuously pursued to ensure an accurate evaluation of success.
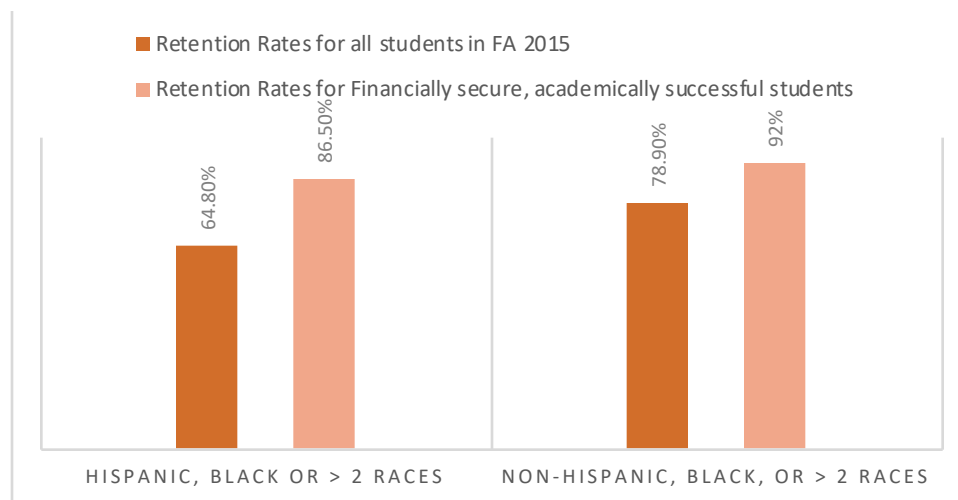
One four-year private institution aimed to investigate any differences in graduation and retention rates based on racial differences in their students. They found troubling results, particularly for their students of color. The retention rate for the students of color who identified as hispanic, black, or of being two or more races (HB2) was 64.8 percent, while it was 78.9 percent for students who did not (NHB2). Given the significant difference in retention rates among the two groups, the researchers wanted to investigate important variables identified with respect to the retention rates among the groups. The main variables that the institution identified as possibly affecting retention were the difference between a student's high school and college Grade Point Average, the number of hours a student attempted versus completed in their first term, and the level of financial security, or perceived financial security, of the student.

When exploring these variables, the researchers found that each could help explain lower retention rates, particularly in the HB2 group. For instance, nearly one-third of the total cohort had a Grade Point Average at least one full letter grade lower than their high school Grade Point Average. A larger share of the HB2 population (46.6 percent) fell into this category, compared with just 23.9 percent of those in the NHB2 group. Researchers then flipped the variables and identified "success variables" by setting limitations for each individual variable. For instance, if a student achieved a first term Grade Point Average within a point or better of the cumulative high school Grade Point Average; stayed within a credit of being on track for graduation; and/or had a medium or high sense of financial security, their first-term retention rate was above 85 percent. The researchers then investigated these success variables within the two racial groups.

While the retention rates remained higher for each success factor in the NHB2 group versus the HB2 group, the financial security variable stood out for the HB2 group. Even for HB2 students who were moderately financially secure (sense of financial security in the medium to high range), the retention rate was only 77.6 percent. After variables for financial security and academic success were combined, the rate for this underserved group climbed to 86.5 percent, but was still below the 92 percent rate for the NHB2 students.

These findings are critical in helping determine which factors affect student retainment, particularly students in vulnerable populations. Another interesting point from this particular study regarded the mindset of those students who filled out the surveys. By adding the financial

Figure 5. Retention rates by level of financial/academic success and racial category at a four-year private institution

Retention Rates for all students in FA 2015
Retention Rates for Financially secure, academically successful students

64.80% 86.50% 78.90% 92%

HISPANIC, BLACK OR > 2 RACES   NON-HISPANIC, BLACK, OR > 2 RACES

security variable, the researchers found that although students might be designated by the institution as having high financial need, this didn't necessarily mean that they identified as having a low sense of financial security. While 58 of the HB2 students had high financial need, only 26 indicated through the survey that they had a low sense of financial security. This could speak to what other colleges found, that receiving financial aid doesn't reliably predict higher graduation rates given other factors, but perhaps not all students who require financial aid and who would benefit from it most are seeking it out. This prompts several questions, including "How are institutions ensuring that their students are properly educated in terms of financial status?" and "Are these institutions providing students with all the financial aid available to them?"

Additionally, the researchers at the institution also predicted retention through limited dependent variable regression models. They summarized the success factors and related variables for each of the outcomes they explored. For students who were predicted to leave but ultimately stayed, (n=41), researchers saw higher averages than those of students predicted to leave who ultimately left. Also notably, 37.8 percent of the students predicted to leave who left were from the underserved population, while only 26.8 percent of the 41 who stayed were in the underserved group.

One four-year public institution found that their success with students of color, while concerning, paralleled many trends across the United States. The researchers at this institution, therefore, intentionally included quantitative and qualitative research methods to understand the possible "why" behind the discrepancy between students of color and non-students of color success rates. The quantitative analyses examined the relationship between institutional support

experiences and graduation within six years, including how those relationships differed between students of color and non-students of color, and analyzed pre-college experiences and college expectations between students of color and non-students of color (based on the pre-college survey). The qualitative research included semi-structured focus groups with African-American/Black and Latinx students at the college.

The pre-college survey results uncovered differences between the college expectations and pre-college experiences of students of color and non-students of color.

Even before beginning their classes, undergraduate students of color were more likely to be considering transferring to another institution. They also had higher expectations of student-faculty interaction than other students.

Additionally, the logistic regression analysis revealed multiple significant predictors of graduation for non-students of color and, to a lesser extent, female students of color at the institution. For example, Greek participation was positively related to graduation rates for students of color and non-students of color. On-campus student employment was a significant (positive) predictor of graduation for non-students of color and female students of color, but not for male students of color. For male students of color, only academic progress and Greek participation predicted graduation reliably within six years.

Although the quantitative portion of the study provided much insight, it also raised other questions. The difference in regression models for students of color, particularly males, compared to all other students suggested that there may

Figure 6. Six-year graduation rate differences between racial groups and self-identified gender at a four-year public institution

Men ■ Women ■

STUDENTS OF COLOR: 67.20% (Men), 75.50% (Women)

NON-STUDENTS OF COLOR: 76.90% (Men), 81.90% (Women)
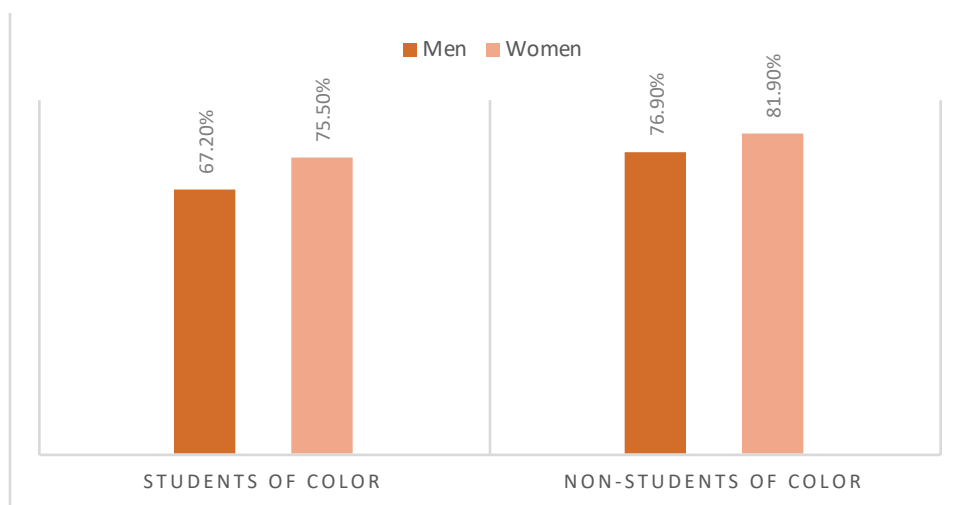
have been additional variables contributing to the success of these students that were not represented by the original model. Some of these variables, the researchers speculated, could be related to the challenges that were articulated in the focus group sessions with African-American/Black and Latinx students. Most participants had clear and high expectations for academic success and felt that they had the experiences and exposure to prepare them for the rigors of the college classroom, yet two or more participants in each of the five focus group sessions discussed frustrations related to: feelings of isolation and pressure to succeed due to being the only member of one's race or ethnicity in a classroom setting; negative experiences with group assignments in classes, particularly because non-student of color peers seemed not to value their perspectives; micro-aggressions (e.g., peers making assumptions about the students, such as that the students came from lower income families); and Tokenism (being treated as "poster children") by university officials when it came to marketing to diverse students. Yet, students argued, when racial related incidents occured on campus, university administrators did not respond quickly or effectively.

Two of the institutions in Group B had similar goals with their student populations and used similar initiatives to attempt to help their students in vulnerable populations. One institution, a four-year public, introduced their institution as one designed to serve the educational needs of students of color primarily in education and industrial trades. Most of their students faced unique challenges, for example, 85 percent received Pell Grant funding for their education, while more than 80 percent were first generation college students, and 75 percent or more attended K-12 urban schools. These numbers suggest that the overwhelming majority of these students grew

up facing a number of challenges and hardships. Similarly, a four-year public tribal institution had an incoming freshman average age of 29 where 81 percent of full time students received a Federal Pell Grant. In addition, over the last four semesters, 66 percent of incoming freshmen were in need of remedial work in math and in other core classes. In both of these institutions, students not only face the struggle of attending college, but do so without much of the needed preparation for being successful—initially persistence is not high on their agenda but surviving their first year in college becomes their reality.

The four-year public institution looked particularly at the college of education and what initiatives may help retain students. In 2017, they committed to group incoming first-time freshmen by declared majors. Students were placed in cohorts, which included block schedules and learning communities, with the hope that they would see progress in meeting the many challenges of working with students who are not well prepared to enter college and who often don't persist in college. The initial findings suggest that these programs and learning communities may help students retain in school and earn higher Grade Point Averages in their classes. While the results were not significant (p=.30), researchers argued that this could be due to the smaller sample size and the recent application of this particular initiative. The institution may need more time and more participants to see any significant effect of their changes.

Similarly, the four-year public tribal institution implemented a first year cohort project and found that the cohort group (N=15) had a persistence rate of 73.30 percent from Fall 2017 to Spring 2018. Although this rate was, again, not significantly higher, it was the highest persistent rate for students in this particular vulnerable population to date. Both

Figures 7a and 7b. Summaries of answers with the word "student(s)" to the questions "what are your perceptions?" and "what has been hard for you as a student?" For viewing purposes, note that the color highlighting the entire statement starts to the left of the word "student" and continues on the right side of the word "student" in the same color. See the first image for an example of a complete statement, the sentence and lines highlighted in pink show the entire statement.

Note: statements without highlighting or outlining begin or end with the word "student."
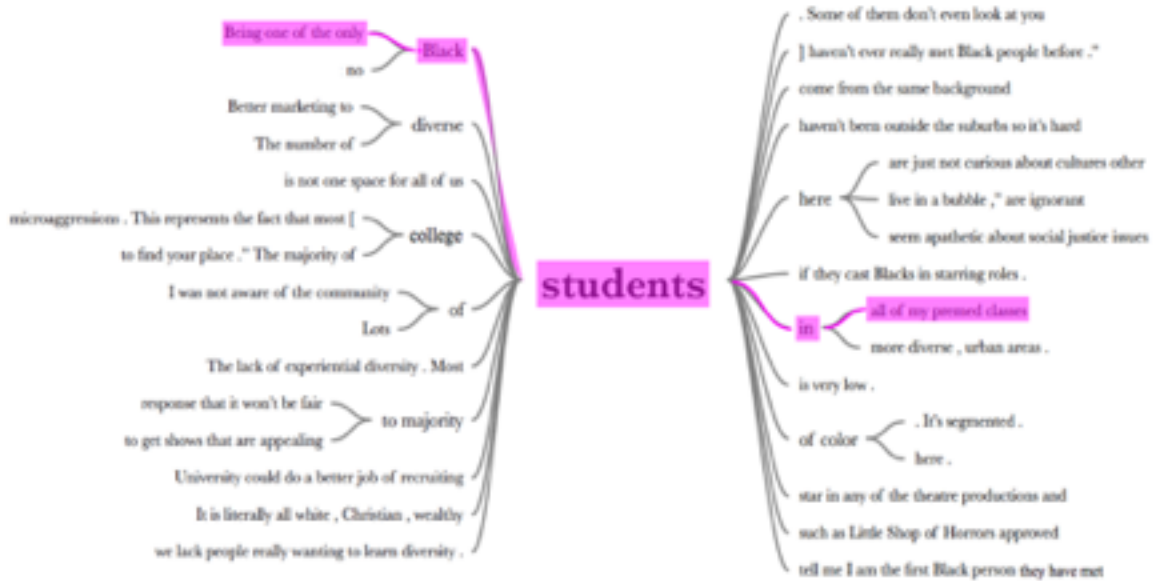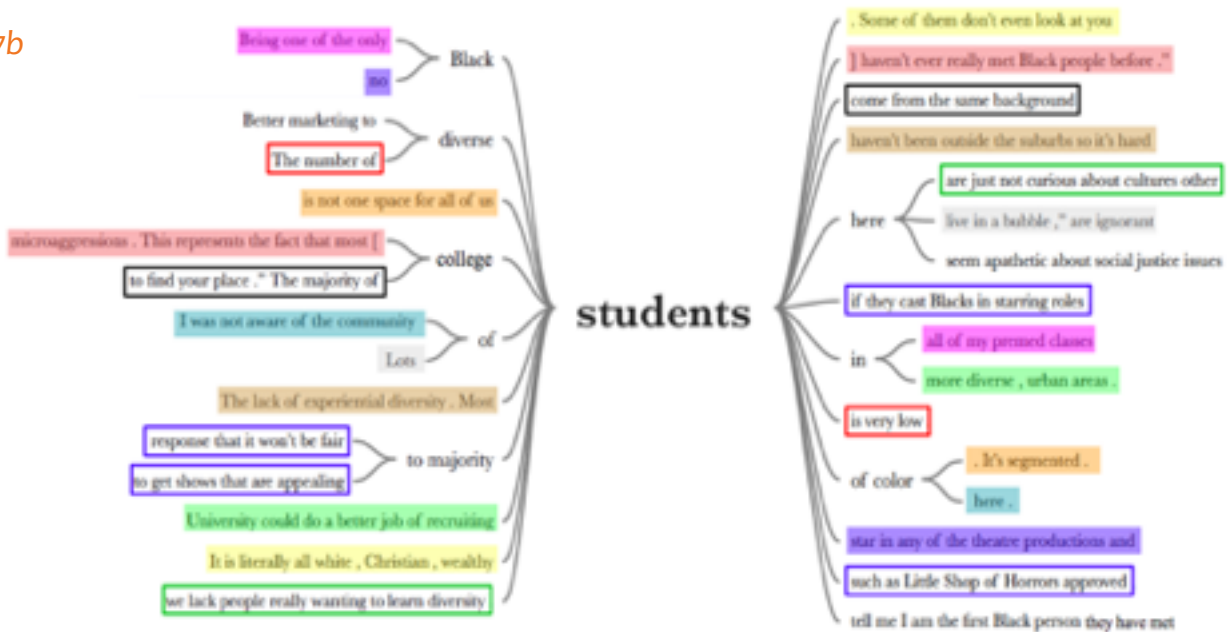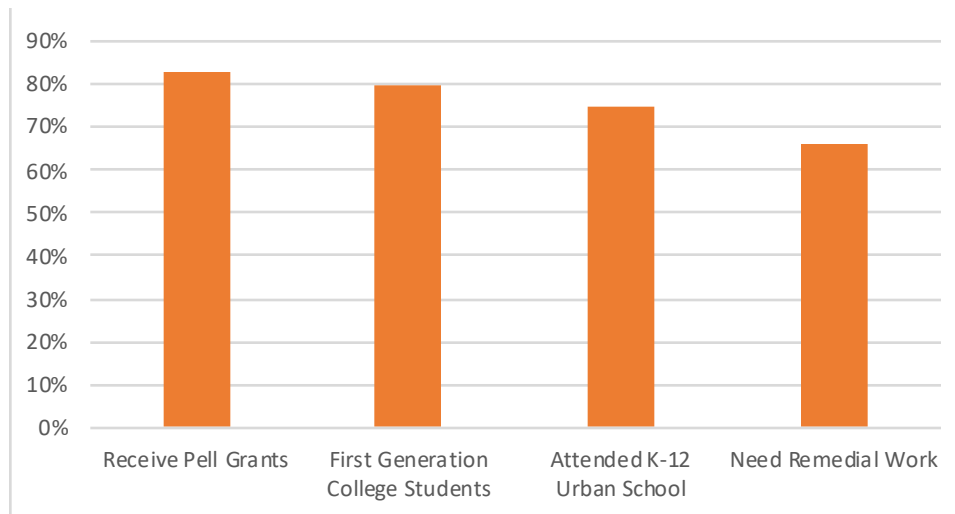
Figure 7a

Figure 7b

Figure 8. Demographic characteristics from a four-year public and four-year tribal institution

of these programs, and the other institutions involved in the vulnerable populations group have made great strides in their attempt to help students in their institutions who are most likely to leave before gaining any kind of degree or certificate.

According to data that one four year public university investigated, there are significant differences in population (2.7 million/5.6 million) and bachelor's degree attainment rates (14.7 percent/19.7 percent) between students who identify as Native-only and those who indicate Native identity as part of the Two or More racial category, respectively. Outcomes are important, but they learned that Native American identity and visibility is a central consideration in any effort to understand and build effective, sustained responses or programs. One group representing Native American student concerns on campus met with a group of administrators and determined a need for additional discussions. After several meetings a number of initiatives were formed with the simple goal of having students gain support to be seen and heard, to be visible and recognized in the campus community.

The institution found that Native student populations reflected national trends. A total of 69 Native-only students enrolled in Fall 2018, 36 of those undergraduates, the lowest number recorded since reporting began in 2010. Disaggregating those numbers further, the school saw a precipitous decline from senior to freshman Native-only undergraduates in Fall 2018 in that there were 13 Seniors, 10 Juniors, 9 Sophomores and only 3 Freshman.

In order to discover more about their Native American students' experiences, the school pulled questions from the Student Experience in the Research University (SERU)
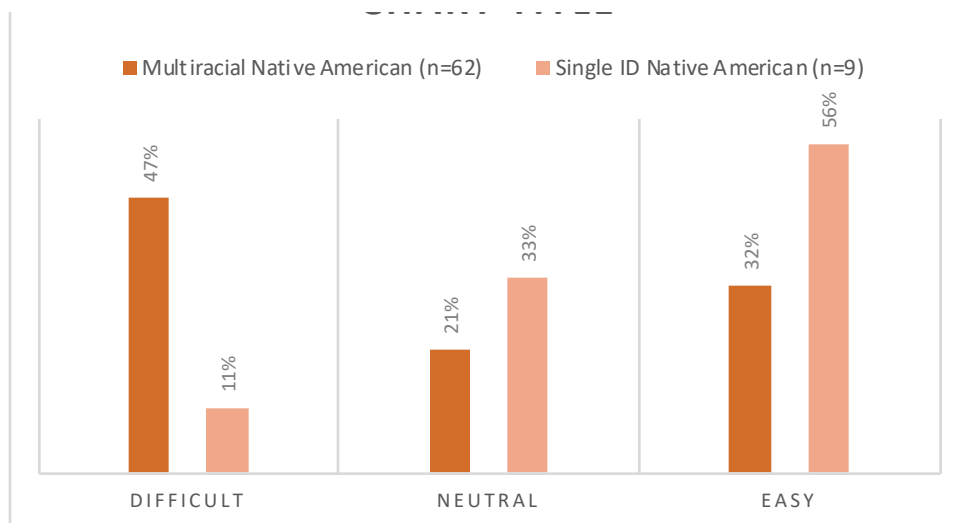
survey that they administer to better understand student assessment of the campus climate. One question on the 2018 UMAY survey asked respondents to "rate the level of difficulty in finding people on campus who share my background and experiences." The results are in Figure 10.

Considering this data and the group that they pulled, the researchers at this institution noted that the number of Native American single identity responses was only 9, out of a total self-reported single identity Native undergraduate population of 36, a 25 percent response rate.

The school's first reaction was to reject the number 9 as a single digit triviality – but they resisted this trained response and dug deeper, understanding that only one student out of nine found it difficult to find others on campus that shared their background. When investigating further, there was significance to be found in this, as it does make sense that the small number of single identity Native American students will find each other, know each other before arriving on campus, and form a community once here, whether it's via the Native American Student Association, or through other networks.

In addition to the data that the program collected on Native American populations, they also measured other underrepresented minorities and non-underrepresented minorities. They observed that close to half of students who identified as multiracial Native American had the most difficult time, by a margin of 12 percentage points above other underrepresented minority students, excluding Native American, in finding people on campus who shared their background and experiences. These data need to be examined further, considering the point made previously that students who identify as multiracial Native American are growing in number at universities and colleges.

Figure 9. Feeling of Belongingness Among Single Identity and Multiracial Identity Native American Students at a Four-Year Public Institution

Multiracial Native American (n=62) ■   **Single ID Native American (n=9)** ■

	DIFFICULT	NEUTRAL	EASY
Multiracial Native American	47%	21%	32%
Single ID Native American	11%	33%	56%

Considering this data and the information that the school received from community and student sources, the institution wanted to begin putting data into action. One way they're doing this is by hosting a conference this year where approximately 125 Native American students from all over the country will converge to engage, network, and learn to effectively navigate the college application process. The institution also strongly believes in taking responsibility and remaining accountable for acts committed against Native populations in the area in which the university is situated. They're confronting these issues in a number of ways; one is to establish an institutional acknowledgement statement to be read at events, another is to listen to and participate in communal attempts to heal past wounds, for instance when directors and members of departments in the college joined in an annual Trail of Tears Remembrance Walk with community members. While these attempts may not seem directly related to student success, it is crucial to remember that for many students, the first and often hardest step to success is enrolling in the school and committing to a degree.

As the first two groups in the study discovered, the importance of truly understanding student goals and life circumstances cannot be understated. Furthermore, an institution must be aware of how their goals may differ from not only student goals but from goals put forth by faculty, staff, and the larger community. This notion was one that Group C aimed to investigate further.

Group C: Misalignment of Goals

Using existing definitions of success, those that are based on traditional metrics (e.g. persistence and completion),

often fail to account for the goals of the student, resulting in institutions failing to receive credit for helping the student meet goals that might be less apparent but of equal importance. Institutions in this group were concerned about the message that such measurement sends to the students about what qualifies as "success" and the lasting effect that incongruence in definitions could have on their students' self efficacy. If consensus can be reached in terms of who to count, when to count, and what to count, an equitable starting point might be reached for institutions, accurate metrics for measuring student success, and a foundation for establishing benchmarks for student retention, graduation, and persistence. Like those institutions in the National Student Clearinghouse Data sub-group, institutions in Group C determined a need to continue disaggregation of their data to better understand variation in student goals by student populations.

A number of the institutions in this group focused on the redefining and even renaming of certain student goals. In doing so, institutions could begin to better identify reasons that students might leave before completing a traditional goal, and can better evaluate the student's success. For instance, one two-year private tribal college emphasized a renaming of the reasons why students leave. This could be particularly helpful for community colleges, technical institutions, and tribal colleges, where students leave at even higher rates, often significantly reducing the institution's defined success rate, as students leave before attaining any degree. The college argued for this change in terms following the findings from their study. In their student sample, there were 134 first-time students who entered in fall of 2017. Of those, 3 students in this cohort completed their programs of study, 9 students changed their programs of study with

intention of transferring to another institution, and 4 indicated they were leaving to join military service. Of the remaining cohort of 118 students, almost 50 percent dropped out before completing a program of study. Reasons for leaving included lack of housing, medical or health reasons, and lack of financial resources. Others were because of family emergencies and nine for other reasons. Other reasons are not specified but typically are of a personal nature and not medical or health related. Importantly, absenteeism accounted for 60 percent of the dropouts.

With these findings in mind, researchers argued that institutions should consider a number of reasons why a student might leave. They coined and use the terms "drop out," "stop out," and "job out" to describe various reasons for departure.

For instance, a "drop out," is a student who leaves and does not return to school, a "stop out," is a student who leaves for a short period of time but does return, and a "job out," is a student who leaves for a work experience. Institutions may benefit from using simple terms like these when evaluating future directions of their students. Perhaps one more term could be added, when a student leaves the current school to study at another institution, this could be a "swap out."

Correspondingly, a two-year public institution in Group C discussed that many of their enrollments contain "skill builders," students who often enroll as degree-seeking in order to obtain financial aid but who actually plan on taking just a few classes in order to build certain, often job-related, skills. This institution investigated success by creating two outcome measures: success and persistence. Instead of using simple graduation rates as their outcomes, they were determined to find more realistic indicators of success to students.

They defined success as completion (earning a certificate or degree) or transfer to a four-year institution, and persistence as completion, transfer or continued enrollment at any other higher education institution (not just the institution performing the study).

They found that taking at least one "guaranteed transfer" course was the strongest predictor of both outcomes. When the number of guaranteed transfer course credits the student earned increased by one, the chance of earning

an associate degree increased by 8 percent after controlling other variables. Similarly, the odds of transfer, success, and persistence increased by 4 percent, 7 percent, and 5 percent respectively when the number of guaranteed transfer course credits a student earned increased by one. Reversely, taking developmental courses decreased the likelihood that a student would transfer or be successful by any other measure by 10 percent, and 9 percent, respectfully.

Additionally, certain demographic variables were related to more or less success as well as institutional variables that the researchers looked into. Male, non-African American (including white, asian, hispanic, and American Indian), younger, and non-first-generation college students had significantly higher transfer, success, and persistence rates than their counterparts; female, African American, older, and first-generation college students had significantly lower rates than their counterparts in all three categories. After a series of tests, it was found that all the student outcome differences by demographics listed above were statistically significant.

One four-year public institution worked on redefining success as retention within two- and four- year rates and success in the classroom as measured by Grade Point Average for their 2014 cohort of students. They found that for each additional unit of Grade Point Average, students' odds of retention were 4.8 times higher.

Thus, for the 2014 cohort, a student with a 3.50 Grade Point Average was, all else being equal, nearly five times more likely to remain in school for at least two years than a student with a Grade Point Average of 2.50. Additionally, students who entered college with Advanced Placement or concurrent enrollment credits under their belt were more likely to be retained than those who arrived without college credits. The institution also found that high school Grade Point Average was more predictive than ACT scores in retention and college Grade Point Average.

When looking at classroom format (online vs. face-to-face), for every 10 percent of a student's course load taken online, his or her odds of retention increased by 72 percent. Thus, based on this model, students who completed 30 percent of their coursework online were over twice as likely to be retained as those whose educational

experiences had taken place entirely within classroom walls.

One four-year private institution continued similar work and explored the success rates in their own student population from a 2014 cohort, making a number of suggestions follow their results. Retention results were found to differ based on residential status of a student in that residential students were retained up to 8 percent more than commuter students. Interestingly, residential and female students were also found to be more likely to utilize tutoring services. These students were up to 34 percent more likely to successfully complete the course in which they sought assistance.

There were also differences in retention rates depending on the student's major. Students in the nursing major, both undergraduate and graduate, had higher retention rates than all non-traditional programs, while business students retained significantly less, with ranges of 6 percent to more than 20 percent lower, depending on emphasis area.

While the first group demonstrated the need to focus on student intent and circumstances, and the second group focused on the needs of students in vulnerable populations specifically, the third group found that institutional goals must be clearly available and must correspond to the goals of the students, faculty, and staff of the institution. This leads to the fourth group, which investigated the ongoing tensions between accountability and improvement in many institutions. While the data suggests that improvements are necessary and that definitions must change, how does an institution implement change in a way that is accessible and attainable by those at the institution? The fourth group attempted to answer these questions.

Group D: Tensions Between Accountability and Improvement

As with the other three groups, institutions in this group identified the value in understanding difference – specifically, differences that may exist in the preparation and goals of their students, and how those variables reflect on institutional performance. Pointing out the wide array of institutional types in the room, the variations in their mission, and the make-up of their unique student populations, Group D underscored that success for one student or one institution will not necessarily equate to success for another. Improvement, therefore, was

thought to be dependent on context and not measurable by one standard. Institutional respresentatives expressed that they had just begun to uncover the power of their data and were committed to being more intentional with their analysis in understanding their students.

The researchers at a two-year public institution intended to examine the progress made on the college's efforts to provide better access to quality data to all internal stakeholders. Utilizing Achieving the Dream's Institutional Capacity Assessment Tool (ICAT) survey and follow-up World Café, preliminary data was collected, and the results of this work underscored the importance of the effort to advance data utilization on campus. Data improvement work continued, and new solutions were developed based on the findings of the ICAT. Specific attention was given to improving access to standardized reports and communications regarding the underlying definitions and methodology. The researchers were also involved in a research project on Educause's Integrated Planning and Advising for Student Success (iPASS). The focus for the iPASS work at this institution was to improve student outcomes through redesigning how the college leads students through an education planning process and continuously coaches them to completion. Key transformational work was

Figure 10. Logistical Regression Findings of Academic and Demographic Variables and their impacts on Two-year Retention Rates at a four-year public institution

Variable	b	Exp(B)
High School GPA	0.364	1.44
ACT score	-0.029	0.972
Taking Concurrent/AP classes	.814***	2.257
Two-Year College GPA	1.566***	4.786
On Campus	-0.092	0.912
Athlete	-0.128	0.88
Out of State	-0.713	0.49
Race	.738**	2.091
Gender - Female	-0.651	0.522
Age	0.026	1.026
Online Percentage	.069***	1.072
Penn Student	-0.087	0.916

*p<.10   **p<.05   ***p<.01

being done to coordinate the institution's business processes and to incorporate technology that allows faculty advisors to work with students to establish a plan of study. The focus of this solution was to engage faculty and students in a more purposeful process that kept students progressing toward graduation. Additionally, at-risk students received support from academic coaches in the navigation of the multiple challenges to degree completion that may arise.

As a result of these initiatives, the college saw nearly a 3 percent improvement on institutional student completion rate and within their state, their three-year degree completion rate of 39 percent was the highest of all two-year colleges in their region. Additionally, speaking directly to accountability and improvement, Franklin Covey's 4 Disciplines of Execution (4DX) was used to engage every employee on campus for this project. This tactic required all employees to organize into teams based on similar work focus. The teams met weekly to report on their last week's commitments and their leading indicator progression that supported the institutional lag measures assessing performances in retention, persistence, and completion. The college also identified wildly important goals (WIGs) and provided a framework that allowed the institution to understand how well the many efforts being worked on were contributing to the institutional goals. Researchers found that of the 126 full-time employees at the college, 102 were engaged in one of 20 WIG teams. They also found that in the last year, employees of the college were becoming more confident in how the institution was using the data that it collects. There was still, however, some concern about how well the college was doing with understanding the student experience throughout their years. Importantly, data implied that employees remain uncertain
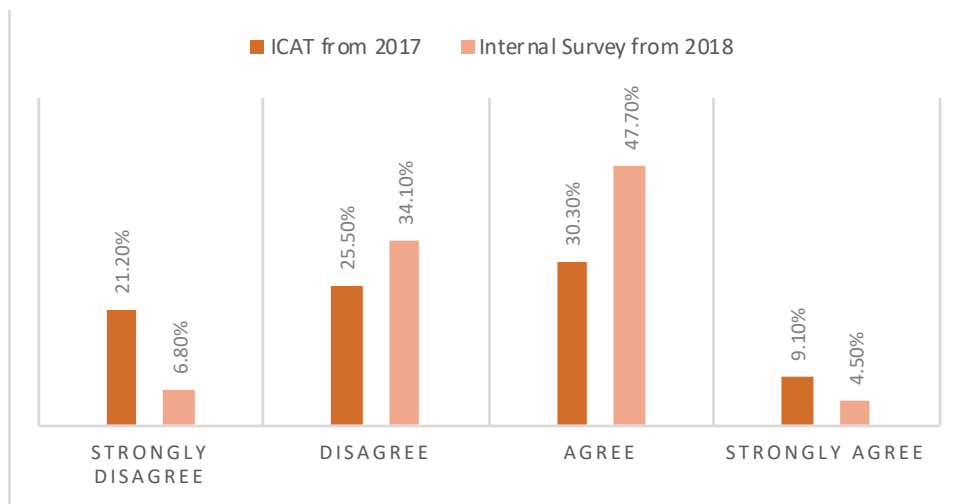
about how data analysis is providing meaningful insights.

A four-year private institution in Group D aimed to determine students needs, particularly from faculty and staff on campus, and how they would be able to provide adequate support. Faculty and staff worked together at this institution to cultivate a culture of CARE; by working with students to challenge, advise, remediate, and encourage, they aimed to positively impact the students' college experience. They were particularly curious about how these variables could impact if a student was "thriving" in their institution. They defined "thriving" as: getting the most out of a college experience so that a student is intellectually, socially, and psychologically engaged and enjoying the college experience. The researchers found that once they broke down each portion of the CARE model that they created from a 15-item survey, two points in particular emerged as predictive of a student's ability to thrive. The two that were important were that faculty and staff were attending events that students were attending, and that faculty and staff supported the students, particularly during challenging times in a student's academic career.

Overall, students indicated they needed two support functions from faculty and staff at an institution. First, the students needed the faculty and staff to see them outside of the classroom experience. Second, a student needed to know that the faculty and staff listened to them and supported them through the challenges of life and school. With these two functions, the students felt they would thrive leading to stronger success, persistence, and completion. The simple phrase emerging from this study was: See Me, Hear Me.

The researchers at a four-year public institution hoped to determine which High-Impact Instructional Practices (HIPs) worked best to retain and graduate students. The programs investigated for retention rates were a New Student Seminar and a Research Apprentice Program, and for graduation rates researchers

Figure 11. Changes in perception of data availability between 2017 and 2018, after initiation of 4DX at a two-year public institution.

Legend: ■ ICAT from 2017   ■ Internal Survey from 2018

	STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE
ICAT from 2017	21.20%	25.50%	30.30%	9.10%
Internal Survey from 2018	6.80%	34.10%	47.70%	4.50%

looked at programs that typically occur later in the undergraduate process such as the Undergraduate Research Program, and the availability and use of Internships. The researchers had a number of interesting and differential findings regarding the HIPs. First, they found that there were differences in the participation rates of the programs based on race and first-generation college student status. They defined students of color as those students identifying as African American/Black, American Indian, Hispanic/Latino(a), or Southeast Asian, either alone or in combination with other races/ethnicities. Additionally, the researchers investigated the HIPs and found that specific student populations differed tremendously in their retention or graduation rates based on participation in these HIPs.

Figure 12. Stepwise regression findings of encourage-related variables impacts on the level that a student "thrives" on a four-year private campus.

How do Faculty Attending Events and Providing Support through Challenges Predict "Thriving" in a Student?

Model	R	R Squared	Adjusted R Squared	Std Error
Events	0.38	0.15	0.48	0.83
Support	0.43	0.18	0.18	0.81

Dependent: Thriving

Figure 13. Retention rates based on if students participated in various High-Impact Practices at four-year public institution

Legend: Students of Color in Program — All Students of Color

NEW STUDENT SEMINAR: 90.10%, 71.40%
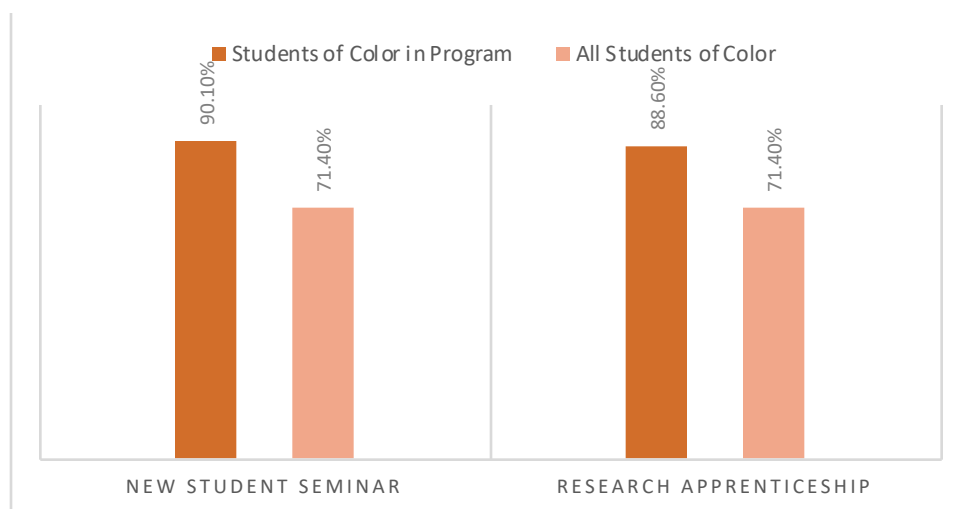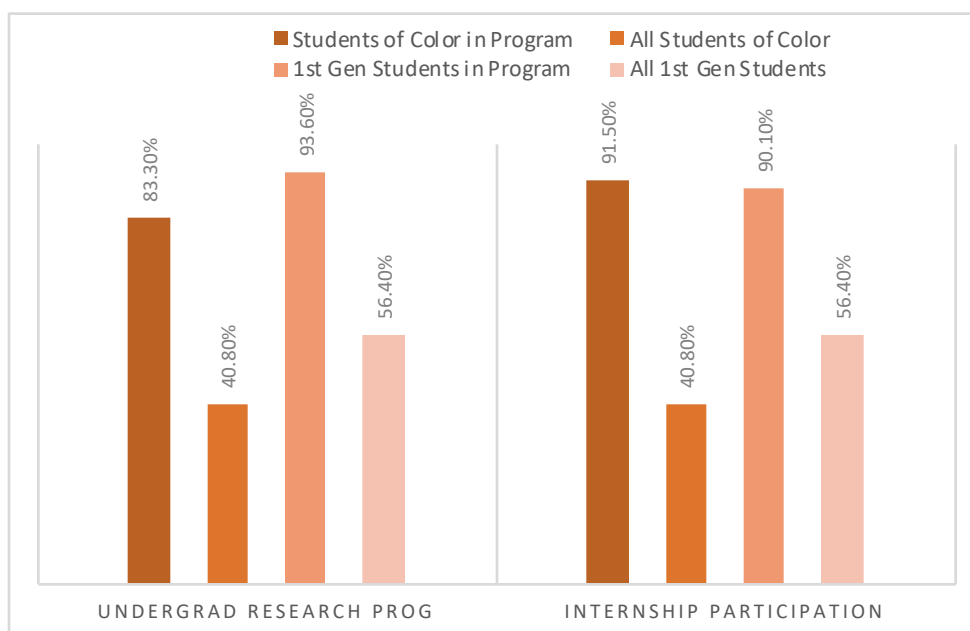RESEARCH APPRENTICESHIP: 88.60%, 71.40%

Figure 14. Graduation rates based on if students of color and first generation college students participated in various High-Impact Practices at a four-year public institution

Legend: Students of Color in Program — All Students of Color — 1st Gen Students in Program — All 1st Gen Students

UNDERGRAD RESEARCH PROG: 83.30%, 40.80%, 93.60%, 56.40%
INTERNSHIP PARTICIPATION: 91.50%, 40.80%, 90.10%, 56.40%

A limitation to this research was that most of these programs are opt-in programs, meaning that the students themselves choose to participate, possibly leading to a self-selection bias. Awareness of these rates, however, might embolden more institutions to make such programs mandatory or encouraged in the future, in which case research could become more prevalent and accurate on HIPs in general.

Following the research project, the investigators emphasized that institutions need to collect retention and completion rates and set ambitious but attainable data-based goals appropriate to the mission and student populations. Disaggregating data for various student populations of interest (i.e. Hispanic students in a Hispanic-serving institutions; first-generation students in many 4-year comprehensive institutions) allows institutions to identify patterns across groups to begin to understand differential participation in and impacts of campus programs. Future investigations of this dataset could look at specific subgroups (e.g., why students of color and first-generation college students participate in Internships at lower-than-expected rates, when they participate in other HIPs at higher rates) and make improvements.

Much like the previous institution, a four-year private institution in Group D was intent on a new attempt to learn more about their students' successes, and failures, specifically the reasons for student failure and possible interventions to student failure.

The instrument they used, TEAMS3: Teaching and Learning, Engagement, Advising Management System, tracks activity, at-risk behaviors, results of learning assessments, advising patterns and effectiveness, coaching notes, and all student-faculty and student-system interactions in near real-time. This instrument helps educators to quickly become aware of patterns in their student populations and may help with speedy interventions that apply.

With this data available, the researchers investigated students that were withdrawn from courses and found the following reasons for student withdrawal: one failed student had an issue with financial aid or other; one failed student did not have the learning foundation required for academic success; 25 failed students were students whose

Figure 15. Rate of passed/failed/withdrew for students that failed one class at a four-year private institution.
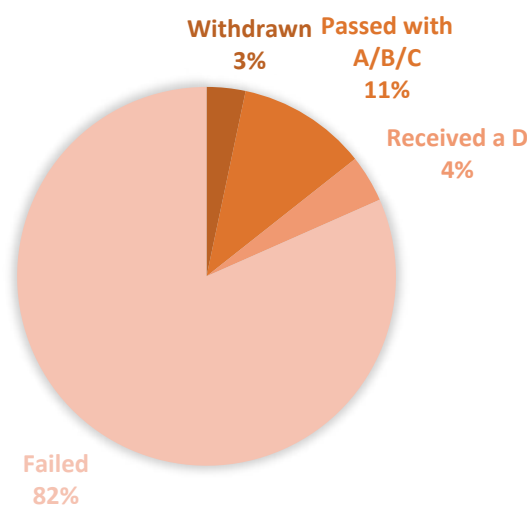
faculty failed to identify and/or act on a problem and suggest an intervention. It is unclear if the faculty failed to contact the student at all or if the faculty failed to fill out the official campus alert form; and two failed students were students whose advisors failed to identify and/or act on a problem and suggest an intervention. Additionally, faculty completed at-risk reports for only 13 of the students in the analysis.

The researchers also found that the majority of the advisors' communications, which were automatic emails sent to the student's address, met with students' unresponsiveness. In only one instance was a plan for a corrective path proposed to the student. The method used in this research could be informative for all faculty and staff, particularly for those students in online class formats where face-to-face engagement is rare or impossible.

Another finding of interest from Group D was that if a student failed in one class, they were significantly more likely to also fail in another class. An inventory of learning and advising activities was conducted for each of the students in a randomly selected course. The students were enrolled, collectively, in 53 other courses. Figures 16 presents the result of grades assigned for the 91 course registrations associated with these students' first term with the university.

Overall Findings and Future Directions

In testing student success, one theme that continually emerged among the participating institutions was that success to one student does not necessarily mean success to another, and that defining student success cannot be measured or achieved in a "one size fits all" capacity.

Group A (Future Intentions Group) found that regardless of the student intent listed on paper, contextualizing the student's life and finding out their personal intents and hardships can significantly impact their results when measuring success. This rang true particularly when it came to students' intentions surrounding graduation.

Group B (Vulnerable Populations Group) investigated not only if the students in vulnerable populations at their institutions were performing at lower levels than other students, but also why the levels may differ, and how to increase student performance and elevate student success overall. By asking the right questions, and actually listening to the answers, an institution can heighten its awareness of a student's hardships and provide resources to support and help the student succeed. One institution in particular in Group B also had themes aligned with Group D, the Tensions in Accountability versus Improvement Group. The accountability discussed by this institution, however, was focused on how schools and administrations can take responsibility for cultural past transgressions toward a certain racial or ethnic group and as a result, build relationships to increase success of students in that group for the future.

Group C (Misaligned Goals Group) emphasized the importance that institutional goals remain attainable and relevant to their students. An institution must take into account student goals and institutional data before setting their own goals. Many colleges in Group C demonstrated the importance of using data from programs and departments before defining goals, because assumptions or previously-held beliefs about certain class delivery methods and majors may not always be accurate.

Group D (Accountability versus Improvement Group) shed light on how faculty and staff can provide support to their students, in and out of the classroom, and through the use of High Impact Practices. This group also shared ideas on how to increase accountability in the institution in order to support students and therefore benefit the college overall.

The research indicated a high degree of variance between institutional goals of expected completion versus students' goals, which emphasized outcomes other than degree completion (e.g., transfer to another institution, earn credits for a job, transition to military, etc.). How can institutional and student goals be better aligned in the future? Also evident were varying degrees of sophistication related to research conducted by institutions. The variance of available resources (e.g., personnel, funding, data collection, etc.) to conduct the research was expansive among the institutions. In terms of review of HLC Criteria for Accreditation in relation to student success, should expectations be developed regarding the minimal type of evaluation and improvement research conducted by institutions?

The 18 institutions that participated in this work found an encouragingly high number of ways to test and quantify student success. While this also led to more questions about how institutions will utilize these methods and how to make them more available to students, it is the beginning step in ensuring that all students are represented in the data measured and used to define success.

Appendix: Detailed Methods

Group A (Future Intentions Group)

Two-year public methods: For the first part of this study, three surveys were administered, one for each cohort (fall first-time entering, degree-seeking students 2017, 2016, and 2010-2014). The intent of the survey was to understand students' true reasons for enrolling. Students were asked to indicate their ultimate reason for taking courses. Their options were: to complete some classes before transferring to another school; to complete my general education classes before transferring to another school; to complete some classes to make more money or get promoted at work; to graduate with a transfer degree (AA or AS) before transferring to earn a Bachelor's degree; to graduate with a workforce degree (AAS) or certificate; and other: _____.

Of the 3,575 Fall 2017 students who received the survey, 378 (10.6 percent) completed it. Two hundred and sixty-eight (7.3 percent) of the 3,650 fall 2016 students completed the survey. And, 802 (3.8 percent) of the 21,022 students from fall 2010 through fall 2014 completed the survey. Each survey also included a prompt asking how the students paid for their courses. In order to examine expanded methods to measure student success following recommendations outlined by the 2011 Committee on Measures of Student Success, data was pulled for all first-time students in the fall semesters (including summer starters) 2009 through 2014, for a total of 26,792 students. Given that the typical timeframe used in graduation and transfer rates is three years, no data was examined beyond the fall 2014 starters who would have had three full years (up to fall 2017) to either graduate and/or transfer.

Two-year public methods: For this study, the participants included were the Fall 2016 first-time, full-time, degree-seeking students at the institution. The population was examined for differences between students returning the following fall (n=951) and non-returning students (n=506). All non-returners with valid email addresses were sent a short web survey to better understand their reasoning for not returning. Phone surveys were also completed. By the end of the study, 42 former students had completed a web or phone survey, yielding an adjusted response rate of 12.2 percent. Students were removed from the contact list for re-enrolling at future dates, refusing to participate, or because of obsolete contact information.

Four-year public methods: Based on a preliminary hypothesis that a barrier to graduation was the fee imposed by the institution for each graduation application, the institution gathered a list of all students applying to graduate in fall 2017. Using this list of graduates, a graduation audit was performed to identify all possible degrees and credentials that each applicant might have completed but for which a graduation application was not submitted. Using the results of these findings, the Registrar was engaged to establish a process to identify and confer the additional degrees and credentials. Working through these processes enabled further identification of institutional barriers to graduation and the definition of student success.

Two-year public methods: For this study, the program wanted to better understand the relationships of its students' successful completion, defined as graduation within 150 percent of normal time, with their receipt of financial assistance. The use of binary logistic regression was chosen for this analysis due to the dependent variable being dichotomous and the desire to describe the relationship of the dependent variable with other independent variables. Data used to analyze this relationship came from the institution's student management system and from departmental data tracking. Data was collected for several demographics; the independent variable was whether the student received financial assistance at any time during their attendance for the chosen academic years. The dependent variable was the graduation status of the student within 150 percent of normal time. Enrollments in Associate Degree and 2-Year Technical Diploma programs for the starting terms in academic years 2012-2013, 2013-2014, and 2014-2015 were used to create the sample cohort. The data used unduplicated cohorts, where a student enrolled in two or more programs simultaneously, was included only in the cohort for their primary program of enrollment. The total sample size for the three academic years used was N=1,452.

In addition to financial aid status, the college wanted to explore other demographic variables that might impact success. Self reported demographics included the student's gender, age, first-generation college student status, their ability, and their race/ethnicity. To determine the academically disadvantaged variable, the study based this on the course enrollment criteria defined in the institution's client reporting requirements. The institution's Financial Aid department tracked on-campus jobs, these included both work-study, which is need-based, and the non-need-based student employment opportunities. The Financial Aid

department also tracked the recipients of unsubsidized loans. The institution's Foundation also provided scholarships for some students and provided this information for the study. Determination of the dependent and independent variables, graduation status and financial assistance respectively, was tracked within the institution's student tracking system.

Two-year public methods: The researchers at this institution investigated the effect of food insecurity and two other variables, academic self-efficacy and students' perceived value of the curriculum, on student persistence. They measured all three variables during four points in the semester (e.g., at the start of the course, during weeks six and 11 of the course, and at the end of the course). Further, the instructors would contact students after they withdrew from a class in an attempt to learn more about the reason why a student left.

The third variable, which was found to be the most significant in the study, was measured as self-reported student demographic variables that have been identified as variables that affect student persistence in community college settings. This measure asked students to self-report the number of hours they worked per week and to self identify possible factors influencing their motivation in the course. The measure also included a U.S. Department of Agriculture 6-item survey, where the researchers averaged the items out, that asked about financial insecurity through questions regarding food availability and security. When exploring food insecurity, the researchers performed a bimodal split to the sample and assigned students as having high or low food insecurity based on whether, at some point, they indicated any food insecurity or not.

To further investigate food insecurity, the researchers used the high and low food insecurity groupings to predict future retention (coming back to the institution for at least one more class in fall 2017 or spring 2018) and persistence (returning contiguously to the institution for one or two semesters after the original class). The researchers received this information from their Office of Planning and Institutional Effectiveness.

Group B (Vulnerable Populations Group)

Four-year private methods: The fall 2015 cohort that the researchers investigated was made up of 377 full-time, first-time students. The first-year retention rate for this cohort was 75.6 percent. The researchers divided the cohort into two demographic groups. The historically underserved population was determined by selecting only those students with an IPEDs race/ethnicity category of Hispanic of Any Race, Black or African American, or Two or More Races. The researchers abbreviated this group "hb2" throughout. The other group is all other categories (not Hispanic of Any Race, Black or African American, or Two or More Races) and this group was abbreviated "nhb2" throughout.

In the figure, the researchers used everything they had access to in a numerical format from their institution's data. They compared the average value for each variable for the retained and the non-retained students, then calculated the t-stat for the typical difference in means test. They then sorted "t" from smallest to largest and hid the rows where -1.96 < t < 1.96 - the typical range for a test with 5 percent significance, and highlighted the smallest and largest values with red and green. The difference in mean is negative (higher for non-retained students) and seemingly significant for all those with a red color and is positive (higher for retained students) and seemingly significant for all those with a green color. Overall, the results were in line with other results that the researchers found - students who faced academic struggles (prior to coming to the institution and during their first term) and who were under financial stress were more prone to leaving the college.

In addition to using the lessons from 2015 and 2016 to generate lists of students with the identified risk factors in the fall 2017 cohort, their data analysis group also predicted retention through limited dependent variable regression models. They used the success factors identified previously in their work in logit models of retention (ret = 1 if retained, = 0 if not retained) regressed on gpadiff, hrsdiff, and fs_level. They used these models to predict, on a student by student basis, the probability that they would persist.

Four-year public methods: This study included quantitative and qualitative research methods. The quantitative analyses included: 1) logistic regression analyses that examined the relationship between institutional support experiences and graduation within six years, including how those relationships differed for majority and minoritized students (students of color and non-students of color, respectively), and 2) analyses of the pre-college experiences and college expectations of majority and minoritized students (based on the Freshman Survey administered to incoming students). Both sets of analyses included first-time, full-time undergraduates who entered the institution between fall 2007 and fall 2011.

The qualitative method used semi-structured focus groups. The population invited to participate in focus sessions was limited to undergraduate African-American/Black and LatinX students enrolled in the institution in spring 2018. A snowball sampling strategy was organized around "intact" groups or affiliations. Some of the intact groups were identified because of their predominantly African-American/Black or LatinX membership. A total of five focus groups (n = 46 students) were conducted in March 2018. Each session had 6 – 15 students in attendance.

Four-year public methods: At this institution, the researchers aimed at learning about their student success work by comparing current first-time freshmen to past cohorts. In this, they determined that their data would help them identify how intrusive advising, building cohorts of pre-education students, and making better connections to faculty and staff would help retain a greater percentage of pre-education students as they became candidates for the Education Programs at the institution. The researchers at the institution also compared grade point averages across a three-year period of first-time freshmen. They used data from their Office of Planning and Institutional Effectiveness and found that in 2015-16, 51 percent of new first-time freshmen were in good standing at the end of their first year; then 54 percent, then 55 percent each additional year. In another analysis, the mean of the combined grade point averages of all students moved from 1.77 in 2016 to 2.01 in 2017 to 2.15 in 2018. When testing these data with an ANOVA, there was not a significant difference (p=.30), although the change was in a positive direction and may simply have needed a larger sample.

Four-year public tribal methods: This research study measured First-Year Experience cohort success in three ways: attendance, persistence, and survey data. Since a majority of their students received Federal Pell Grants and Education grants, it was an institutional practice that instructors recorded attendance during each course meeting date. This quantitative measure helped to indicate how engaged students were in their courses and how motivated they were in completing their educational goals. In an effort to balance a mixed-method study, during the fall semester the researchers at the institution surveyed all first-time freshmen using a Google Forms computerized survey. The students (N=71) were asked to complete the survey in their first-year seminar class, they received a positive survey sample of 55 percent of the full-time, degree-seeking freshman. The survey included scalable questions asking students how their institution helped prepare them socially, intellectually, and through communication skills.

Another set of survey questions, asked students how often in the fall semester they took risks, went above and beyond in their course material, and accepted that mistakes were part of the learning process. The First-Year Experience cohort group overwhelmingly reported undertaking these things more often than the regular group of freshman. The third measure in this research project tracked persistence and retention rates for all full-time freshman who began fall 2017. Although at the time of this report retention data was not available, the persistence rates for the students in the First-Year Experience cohort were available and measured.

Group C (Misaligned Goals Group)

Two-year private tribal methods: The researchers at this institution used a variety of data in this study. The data were collected and analyzed by the team using an evaluative approach. Data sources included: student data within the institution's student information management system; student tracker data within the National Student Clearinghouse; American Indian Measures of Success responses regarding the definition of student success; and student-provided letters of intent regarding why the student chose to enroll at the college.

An analysis was done of persistence and completion data from Jenzabar and National Student Clearinghouse of the first-time students entering in academic year 2013-14. AIMS data and a sampling of letters from students were analyzed to determine student intent and its alignment to institutional expectations. The letters also provided data regarding self-identified student challenges and risk factors. These are discussed in a larger context of historical trauma and culturally responsive approaches to education.

Two-Year Public Methods: This study examined a cohort of students that enrolled at the institution in the fall of 2011 (n=944). These students were new and had not previously enrolled at a post- secondary institution. The researchers tracked students' course records and outcomes for six years, and they extracted students' demographic and academic information from their Community College System's data warehouse for the period during which students were enrolled at their institution. In addition, data from the National Student Clearinghouse was used to track students' graduation and continuing education at different institutions for six years.

Using descriptive analysis, the researchers measured student success such as completion, transfer, and persistence for six years, and compared these to shorter-term student outcomes. These student outcomes were disaggregated by

student demographic information such as race/ethnicity, gender, first-generation status, citizenship, and Pell grant recipient status, which is often used as a proxy for socio-economic status. The researchers compared outcome rates in transfer and degree attainment using chi-square tests to evaluate how outcomes for different groups were statistically different.

The researchers also employed several statistical methods to ensure that research questions and analytic methods were robust. The statistical methods included reliability and validity tests as well as sensitivity tests using ANOVA to find the best predictive model. The major analytic method was a logistic regression model that is generally used for finding predictors and is used when an outcome variable is dichotomous. The researchers fit potential independent variables (exploratory variables) into a series of predictive models to find which factors strongly predicted outcomes of their students.

Four-Year Public Methods: The objective of this institution's project was to identify the factors contributing to student success so that data-informed solutions could be proposed. For the purposes of this analysis, the researchers operationalized student success in two ways: 1) as two- and four-year retention rates; and 2) as success in the classroom, measured by college grade point averages.

The researchers focused on two cohorts, made up of first-time, full-time freshman enrolling either in Fall 2012 or Fall 2014. For the former group, they measured retention levels at both two- and four-year intervals. For the latter group, only two-year retention information was available at the time their data set was collected (N=626). In this summary of multiple institution's work, only the findings from the 2014 cohort are included.

The researchers' predictors of student success fell roughly into five categories. First, they included traditional measures of ability or aptitude, i.e., the high school grades and standardized test scores that typically inform admission decisions. Second, they measured whether or not students enjoyed a "head start" on their college experience through Advanced Placement classes or concurrent enrollment. Third, they considered the degree to which students were enrolled in online courses during their first two or four years at the institution. Fourth, they looked at any special factors related to students' college experience, such as their status as an intercollegiate athlete. Finally, they employed a broad array of demographic control variables to account for exogenous influences on student success. In their significant findings listed in this paper,

the Constant was -5.498*** the Nagelkerke R^2 was .48 and the Prop. Reduction of Error was 55 percent. According to the Negelkerke pseudo-R squared statistic, their models explain roughly one-third to one-half of the variance in their two-year retention rates.

Four-Year Private Methods: One institution looked at success by measuring independent variables on course and college retention. Course retention and successful completion were measured and reviewed at monthly, quarterly, and semester intervals. Course retention goals were differentiated based on the specific student population, modality, course level, course type (qualitative versus quantitative), and course sequence. Additionally, the college's efforts toward managing retention were intentional and included data gathering and analysis occurring at multiple intervals throughout the academic lifecycle. The college reviews academic metrics and trends such as quarter-over-quarter retention, first three-course completion rate, year-over-year retention, successful course completion rates, F/W rates, and continued enrollment rates, all of which act as discrete intervals at which curricular and counseling interventions are made. It was unclear how the independent variables were operationally defined and measured.

Group D (Accountability vs Improvement)

Two-Year Public Methods: In Fall 2017, the institution implemented the Institutional Capacity Assessment Tool (ICAT) by Achieving the Dream, looking at their Institutional Capacity Framework's seven capacities; leadership and vision, data and technology, equity, teaching and learning, engagement and communication, strategy and planning, and policies and practices. This deep dive approach included an all employee survey followed by an all employee world café where cross-functional focus group discussions were held on the survey findings surrounding each of the seven capacities. A research group then coded the responses from the focus groups utilizing the Grounded Theory methodology.

Throughout the 2017-18 academic year, 4DX teams were introduced to Cognos reports to assist them with their data needs for analyzing leading measures associated with their work. In 2018, professional development on Cognos reports was offered to a wide representation of the institution's employees. The President convened a team to further address the improvement plans stemming from the ICAT findings.

These efforts were part of an ongoing process improvement effort to improve the institution's use of quality data across all areas of the institution. To understand the impact of this

year's work, follow-up surveys and focus groups were used to assess any changes that may have occurred.

Preliminary survey evidence suggested some improvements. The entire suite of questions surrounding data and technology from the ICAT were used in the all-employee survey. The results of the all-employee survey were given a side-by-side comparison with the results of the original survey. Upon review, four questions pointed to areas where further qualitative study seemed warranted. These questions formed the basis of the questions for focus group discussions in May 2018. While these discussions have not been coded yet, general improvements were seen in the questions regarding data access, data collection, and data use.

Four-Year Private Methods: The researchers at this institution surveyed students and analyzed data to determine what effect, if any, does one systematic, structured program (C.A.R.E.) have on student success. The on-campus population at this institution has approximately 400 resident students, a large portion of those students (n=330) responded to the survey. While the population was not randomized and tracked, the sample size was large enough to provide a high level of confidence in the results. There were five concepts in this study. The Thriving Question was developed using the work of Laurie Schreiner of Azusa Pacific University. Schreiner describes Thriving as a . . . measure of [a students'] academic, social, and psychological aspects of his or her college experience [which] predicts academic success, institutional fit, satisfaction with college, and ultimately graduation (thrivingincollege.org).

The C.A.R.E. concept consisted of four scales. The "C" scale was a composite score of Q5, Q8, and Q15 (n=3). The "A" scale was a composite score of Q2, Q3, Q6, and Q9 (n=4). The "R" scale was a composite score of Q7, Q11, Q13, and Q14 (n=4). The "E" scale is a composite score of Q1, Q4, Q10, Q12 (n=4). Once the means and standard deviations were calculated with all the variables, the researchers computed scaled scores using the coded variables in the survey.

The 15 items were broken into four scales (C.A.R.E.). The C scale included the average of the three questions (Q5, Q8, and Q15). The mean was 3.81 with a standard deviation of .93. The A scale included the average of four variables (Q2, Q3, Q6, and Q9). The mean was 3.82 with a standard deviation of .69. The R scale included the average of four variables (Q7, Q11, Q13, Q14). The mean was 3.90 with a standard deviation of .72. Finally, the E scale included the average of four variables (Q1, Q4, Q10,

Q12). The mean was 3.93 with a standard deviation of .66.

Four-Year Public Methods: The institution implemented a new Strategic Plan in 2017 that had two objectives focused on student success: 1) improve retention and graduation of all students, significantly narrowing equity gaps in these measures; and 2) increase participation in the most effective High-Impact Practices (HIPs) on campus.

The institution identified and reviewed data for seven student subgroups: international students, underrepresented minority (URM) students, non-URM students, first generation (first gen) students, non-first gen, men and women. The URM group included students who indicate a race/ethnicity of African American/Black, American Indian, Hispanic/Latino(a), or Southeast Asian, either alone or in combination with other races/ethnicities. First generation students were those for whom neither parent had earned a four-year college/university degree. An international student was one who is not a citizen of the United States and who is in this country on a visa or temporary basis and does not have the right to remain indefinitely.

With these independent variables in mind, the researchers worked with representatives from the Office of Institutional Research and Planning and the Office of Academic Assessment who provided data from university databases. The representatives also ran Chi-Square analyses to determine whether specific student subgroups participated in the selected HIPs at rates different than would be expected by chance. Retention and graduation rates of subgroups that had statistically significant Chi-Square results were then descriptively compared for students participating in those programs versus the overall rates for these student subgroups across the university.

Four-Year Private Methods: The researchers at this institution attempted to see how a new tracking system or student and faculty success worked to identify possible reasons why students fail. The program, TEAMS3, was designed to promote meaningful and informed interactions between university staff and the student. Documentations of those interactions create the opportunity to identify points for process improvement, not only for the students, but for faculty and success coaches. Another technology tracks faculty behaviors in the LMS and quality reviewers rate faculty on nine performance expectations related to instruction, engagement, persistence, assessment—all based on the learning sciences.

In the interest of identifying some of those opportunities, a representative sample of students who failed a course were selected and the supporting interactions were analyzed to

determine if more could have been done to promote student learning and success either proactively or as a result of intervention. The action research was also designed to determine if TEAMS3 serves its function for data mining and for informed advising and faculty-advisor communication. Based on historical data, the researchers hypothesized that students failed because of three potential shortcomings and researched these shortcomings through interactions with the students.

The student population represented the typical university pattern. Twenty-seven students were registered for two classes; eight students were registered for three classes; two students registered for four classes; one student registered for five classes, and zero students were registered for just one course. A consulting firm, hired to design data dashboards for mining persistence and completion data, selected a random sample of new students who failed a first-year course to inventory their record of support and learning interactions as documented in the TEAMS3 instrument. The sample consisted of 38 students.

The Higher Learning Commission (HLC) was awarded a $500,000 Lumina Foundation grant in 2016 for programming to cultivate industry leading practices within the higher education accreditation process.

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