

Path to Success: Examining a Multifaceted Retention Model for Major Pathways Students at a Large, Diverse Research University

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This study examines a retention model designed for the understudied, at-risk, Major Pathways students, at a large, diverse, research university. Major Pathways students were defined as undergraduates who initially selected their major during the admission process and while they were accepted to the institution, they were not admitted into their desired major/college primarily due to their math test scores. The retention model included a strategic new student orientation, marketing/outreach, proactive academic advising, and a specialized first-year seminar. The fall-to-spring retention rate increased from 84.5% to 88.5% to 89.6% to 89.7% and increased the fall-to-fall retention rate by 12.9 percentage points.

Keywords: advising, major pathways, at-risk students, retention; first-year seminars, outreach

INTRODUCTION

As part of broader student success initiatives, many institutions continue to identify subpopulations who are underperforming compared to their peers. The institutional goal is to create measurable programs to help close the academic achievement gaps for these important students. At a large, diverse, urban, research university in the southwest United States, Academic Success Center (ASC) staff members partnered with three internal academic colleges to create a multifaceted, tailored retention model to improve the success measures of a targeted subpopulation entitled Major Pathways students. The institution defined Major Pathways students as undergraduate students who initially selected their major when applying to the institution and while they were accepted to the institution, they were not admitted into the academic college (e.g., Sciences, Engineering, and Business) of their desired major primarily due to their math placement test scores. Piloted from 2016 to 2020, the model included a customized student orientation process, marketing/outreach, proactive/intrusive academic advising, and a retooled first-year seminar.

The purpose of this paper is to examine how the retention model helped improve the retention (Fall-to-Fall and Fall-to-Spring) of Major Pathways students, thus closing the gap between the university's Major Pathways students and Exploring (undeclared) majors. It is further necessary to examine the intervention programs within the model, as this retention model could serve as a practical framework for other higher education institutions. From a research standpoint, the information on this subpopulation could contribute to an understudied topic in the existing literature.

BACKGROUND

The general institutional landscape helped facilitate the emergence of the Major Pathways program. With 62.1% of students identifying as a racial or ethnic minority, the campus was one of the most diverse institutions of higher education in the United States (Institution, 2020; U.S. News and World Report, 2020). While diversity is highly valued at the institution, challenges arise when considering a diverse population more likely to also be first-generation, low-income, and underprepared, thereby influencing progression to graduation (Ishitani, 2006). Confounding the situation, the state higher education funding formula transitioned to include a performance pool system, one incentivizing graduation, with the 2015-2016 year considered the baseline year for measurement purposes (Higher Education Funding Formula Summary, 2018). The enrollment of the Colleges of Business, Engineering, and Sciences combined totaled 34.3% of the institution's total enrollment for the Fall 2016 semester, thereby placing a significant portion of the performance-based funding mechanism on the three colleges directly (Institution, 2020). When considered together, these circumstances and the aforementioned enrollment choices offered to students prompted the discussions leading to the emergence of the Major Pathways program.

Considering the institutional landscape, the creation of the Major Pathways program was spawned by three concerned deans representing colleges of science, engineering, and business. An underlying element was when prospective students applied through the university's general admission process, the students had the ability to "select" their desired major and were automatically assigned to the corresponding academic college. By the time their transcripts arrived during the admissions process, some students met the university admission requirements but fell short of the selected academic college's set math requirements.

The three deans and their staff began identifying and closely tracking these students. Across all three colleges, the grade point averages, retention, and progression of these students were substantially lower than their peers. Without meeting the set math placement score required for their majors and by staying in their original majors, many of these students were stuck in developmental (non-college credit bearing) math courses with a high percentage of them failing one or more times. In Fall 2015, 30.8% of these students failed a developmental math course at least one time. These students were unable to meet the prerequisites for subsequent major-specific courses, thus substantially delaying their graduation and/or lessening their chances of graduating with a bachelor's degree in science, engineering, or business.

During the 2015-2016 academic year, the three deans convened regularly and subsequently began brainstorming with the Provost's Office, Office of Admissions, and the ASC. After collaborative meetings, it was determined that these students would be redirected (and re-coded in the PeopleSoft student information system) to the guidance of the ASC, which advised all Exploring students as well as provided learning support services (e.g., tutoring, academic success coaching, supplemental instruction, and bridge programs). It was also determined that the success of the Major Pathways students would be benchmarked and compared to Exploring Majors, who serve as a population with more commonalities than declared-major students within the academic colleges.

The ASC staff members set several collective goals for the Major Pathways program to address academic, sociological, psychological, and financial aspects. The overarching and more-measurable goal was to improve Major Pathways students' academic success measures (i.e., retention, progression, completion, and grade point average) to better mirror the remainder of the undergraduate students and reach the success levels of Exploring Majors. In other words, the ultimate goal was to help Major Pathways students close their achievement gap within the four-year pilot. The staff further developed several sub-level goals that were less daunting. Improving communication was an early priority to minimize the

“campus run around” for students. The staff strived to clearly articulate the logistics and flow-progression of the program to the qualifying Major Pathways students and to other campus units. The latter would help ensure that “the left hand knows what the right hand is doing,” which is a common challenge for large institutions. Another sub-level goal was to help Major Pathways students feel that the ASC was their current home, where their faculty and staff were committed to helping them achieve their academic goals. The staff sought to help destigmatize the new process because some students believed that they were simply rejected from their initial major choice and unwanted. Lastly, the final goal was to adjust the criteria for ASC scholarships so Major Pathways students qualified for the scholarships.

STUDENT CHARACTERISTICS

Major Pathways students are undergraduate students who initially selected their major when applying to the institution and while they were accepted to the institution, they were not admitted into the academic college (e.g., sciences, engineering, and business) of their desired major primarily due to their math test scores. Major Pathways students are considered “at-risk” by national benchmarking standards (EAB, 2020), and the researchers found them to be more at-risk than the general Exploring Major (undeclared) population.

While the researchers were unsuccessful in identifying existing literature relating specifically to Major Pathways students, the literature pertaining to students placed in math remediation is abundant (e.g., Acee et al., 2017; Attewell, Lavin, Domina, & Levey, 2006; Crisp & Delgado, 2014; Crisp & Nora, 2010; Fong, Melguizo, & Prather, 2015) and the two subpopulations seem to closely mirror each other. Compared to their peers, Major Pathways students are more likely to be Pell eligible, first-generation students, and underrepresented ethnicities. Placement in developmental courses dramatically impacts student success by posing a barrier to entry in college-level courses (Bailey, Jeong, & Cho, 2010), delaying course progression (Bahr, 2008), and stopping progress to graduation (Bailey et al., 2010). Brock (2010) agrees, stating that enrollment in remedial courses acts as a gatekeeper to both student access and success. The National Center for Education Statistics (2016) indicates that there has been some progress in closing the achievement gap in mathematics over the past three decades, but significant strides, particularly between the White-Black and White-Hispanic gaps, are still needed. While addressing math preparedness is important, as Tinto (1993) asserts, both academic and social needs must also be addressed in order to attain integration into the college environment, leading to overall college success.

PROGRAM CHARACTERISTICS

The Major Pathways program integrated enhanced new student orientations, targeted first-year seminars, and intrusive advising. Pascarella and Terenzini’s (1991; 2005) extensive review of literature underscores the importance of higher education institutions formally introducing first-year, traditional aged students to campus. Studies suggest that effective new student orientations can better connect first-year students to the campus (Tinto, 1990; Tucker & Hemphill, 2018), help students make social adjustments (Mayhew, Stipeck, & Dorrow, 2011), steer students toward a better academic path (Mullendore & Banahan, 2005; Talbert, 2012; Tucker & Hemphill, 2018) and can contribute to students’ holistic development (Harper & Quay, 2009). New student orientations that clearly outlined student resources were found to be more effective for academic learning and building social relationships, although disparity among race and ethnicities still exist (Mayhew, Vanderlinden, & Kim, 2010). New student orientation programming exists in over 95% of higher education institutions (Barefoot, 2005).

The institution of study offers a campus-wide, one-day new student orientation with portions of the programming dedicated to specific academic colleges. The dates for the incoming, first-time, full-time cohort are staggered from May through August. Leading up to the dates, the ASC academic advisors ask their Major Pathways students to complete an online, pre-new student orientation training (approximately 15 minutes) that covers the general education curriculum, important dates relating to advising, and campus resources. During their dedicated time within new student orientation, the academic advisors provide an

interactive introduction to the Major Pathways' major and the students' college success team (comprised of academic success coaches, academic advisors, and peer mentors), share an in-depth overview of general education requirements and scheduling, and allow students to opt-in to a brief one-on-one meeting with an advisor.

Recent research has shown that academic advising has a positive impact on students, ranging from increased student satisfaction and engagement with the college experience to higher self-reported levels of self-efficacy, study skills, and perceived support at their institution (Mu & Fosnacht, 2019; Sherwin, 2011; Teranishi & Kim, 2017; Parnes, Kanchewa, Marks, & Schwartz, 2020; Vianden & Barlow, 2015; Young-Jones, Burt, Dixon, & Hawthorne, 2012). Several studies have linked the quality of advising to these outcomes. For example, Teranishi and Kim (2017) and Sherwin (2011) both found that advisors who demonstrate empathy, caring, and honesty were important resources. Woods et al. (2017) found that advising was effective when it connected students' general education to majors, career options, and degree options. Bahr (2008) and Woods et al. (2017) also found that the positive effects of advising were particularly significant for students who were academically underprepared. Students on remedial tracks benefited more from advising than college-level peers; this effect increased as students were more underprepared (Bahr, 2008). Advising can play a critical part in helping students understand the role of remediation in their progress to degree and in encouraging students to take on the challenges of college (Woods et al., 2017).

Successful academic advising hinges on the advisors' ability to connect with students—this begins with a proactive approach. In the field, this approach is called intrusive or proactive advising (Earl, 1988; Heisserer & Parette, 2002). Intrusive advising was conceived of as a “deliberate intervention... to enhance student motivation” (Earl, 1988, p. 27). Along with a significant presence in new student orientations, advisors have also found success in practicing intrusive advising in outcomes such as increased retention (Rodgers, Blunt, & Tribble, 2014; Ryan & Glenn, 2002) and increased pass rates of developmental math (Thomas, 2017). Intrusive advising has been shown to lead to several other benefits for students:

Students (a) are more inclined to keep up with their work if they know an academic advisor will contact them; (b) have fewer financial worries; (c) receive necessary connections to university retention services; and (d) are referred to needed support services, thus communicating that someone at the institution cares about them. (Holmes, 2000, as cited in Heisserer & Parette, 2002, p. 74)

A key way to implement intrusive advising is through proactive, sustained outreach. Students who were academically at-risk and were contacted by advisors were more likely to use campus academic resources, connect with an advisor, and to register for classes (Deacon et al., 2017; Heisserer & Parette, 2002; McClure, 2017). Consistent outreach from a college staff member provides a bridge for students to ask questions and build relationships.

Academic advising for the Major Pathways student population is based on intrusive and developmental advising theories (Crookston, 1972; Earl, 1988). Developmental advising theory assumes that the advisor focuses on the whole student, rather than a rote list of prescribed coursework (Crookston, 1972). The backbone of this model is a multi-year communication plan, spanning from the student's acceptance to the university through their sophomore year. The advising team focuses on three areas: providing detailed information on university general education requirements to progress toward a degree, sharing consistent and frequent updates on university policies and deadlines, and mandating individual advising appointments in order to assess students' progress in major exploration. The ASC's communication campaign plan, created by the advising team, included each of these goals and provided for targeted outreach through a university-wide student success management system. The first-year seminar instructors also actively participated in the outreach.

First-year seminars are a national best-practice practice for increasing student success [Association of American Colleges and Universities (AAC&U), 2020]. First-year seminars are courses designed to help first-year students “in their social and academic development and in their transition to college” (Hunter &

Linder, 2005, p. 275). While there are many different models, first-year seminars are intended to create a small (approximately 16-24 students) and supportive, peer-group community (Barefoot, 1992; Hunter & Linder, 2005; Tobolowsky & Associates, 2008). Students are introduced to a wide variety of topics with a focus on teaching foundational skills for college success (Barefoot, 1992; Jewler, 1989). First-year seminars have been extensively researched and empirical evidence suggests they provide numerous benefits to students. First-year seminars can increase and improve student retention and progression, academic performance, degree completion, campus involvement and engagement, faculty and staff interaction, student success skills, and other benefits (e.g., AAC&U, 2020; Barefoot et al., 1998; Bedford & Durkee, 1989; Cavote & Kopera-Frye, 2004; Cuseo, 1991; Fidler, 1991; Fidler & Moore, 1996; Hopkins, 1988; Keup & Barefoot, 2005; Keup & Petschauer, 2011; Kuh, 2005; Pascarella & Terenzini, 2005; Schnell & Doetkott, 2003; Starke, Harth & Sirianni, 2001; Tinto, 1993; Upcraft, Gardner, & Associates, 1989; and Tobolowsky & Associates, 2008).

It is essential that institutions design or tailor their first-year seminars to meet the ever-evolving characteristics and needs (including learning needs) of their student population (Cuseo, 2007; Keup & Petschauer, 2011). The institution of study utilized a first-year seminar designed for Exploring Majors and made adjustments to better serve Major Pathways students. The course was three credits with a letter grade and served as a required general education course. The foundational principle of the course was to instill academic success skills (e.g., time management, study skills, test taking skills, campus resources) with around one-third of the course dedicated to major and career exploration. For Major Pathways students, the latter was adjusted from general exploration to “next-steps exploration.” In other words, many Major Pathways students were surprised when they were not initially admitted into their desired major, then they suddenly were examining which path to take to get into their desired major and/or begin exploring new options. “Next-steps exploration” included major/career exploration exercises integrated with literature relating to open mindset, grit, resilience, and decision-making. For Major Pathways students whose goal of continuing to the originally chosen major were realistic and achievable, career exploration anecdotally appeared more relevant and engaging than major exploration. Considering these dynamics, instructors were intentionally focused on inclusive language, readings, resources, and activities to encapsulate the complexities of Major Pathways students.

RESULTS BY COHORT

First Year of the Pilot

The pilot was launched on a compressed timeline. The decision to redirect Major Pathways students to the ASC was finalized during the latter part of the Spring 2016 semester, when over half of the incoming class had already been admitted to the university. Needless to say, the ASC did not have a sufficient amount of time to implement their full programmatic curriculum for the initial year. Students were contacted shortly before orientation and informed that they had been removed from their initial college and placed in the Major Pathways program. During the first year, Major Pathways students were encouraged to place into a higher-level math and declare their initial major as rapidly as possible. Many were encouraged to utilize the ASC’s Math Bridge Program, which is a supportive, five-week program geared to helping students review relevant math-placement concepts and concludes with taking placement exams. If students were unable to place into higher level math, they were advised through the ASC and encouraged to enroll in general education courses that met the needs of their initial major. Further, Major Pathways students did not collectively enroll in the ASC’s first-year seminar during the pilot year because they had already been block enrolled (manually assigned for enrollment) into the first-year seminar of their originally desired majors.

At the start of the Fall of 2016 semester, 341 students were administratively migrated from their original choice of major to the Major Pathways program (Business: n=131, Engineering: n=91, Science: n=119), which accounted for 51.7% of the matriculating Exploring Majors students (341/660) and 9.1% of the institution’s total freshman cohort (341/3,752). Of the students in the 2016 Major Pathways cohort, the gender was almost evenly split, with 48.7% female (n=166) and 51.3% male (n=175). As expected, this

population of students aligned with the university’s majority minority demographics, although with an even higher percentage of students reporting identifying with an underrepresented race or ethnicity, with IPEDS race/ethnicity as follows: Asian: 10.9% (n=37), Black or African American: 13.2% (n=45), Hispanic: 36.4% (n=124), Native Hawaiian or Other Pacific Islander: 1.5% (n=5), Two or More Races: 12.9% (n=44), White: 24.6% (n=84), and Other/Unknown: 0.3% (n=1). Additional demographics related to traditionally at-risk populations were also seen among the demographics of the Major Pathways cohort, with 37.8% Pell recipients (n=129) and 61.6% self-identifying as first-generation (n=210).

The first year (2016-2017) was challenging with the new population of students, which yielded a baseline fall-to-spring retention of 84.5% for the Major Pathways students. This percentage was slightly lower than Exploring Majors at 90.0%. By the third semester, fall-to-fall retention was at 64.5% for the Major Pathways students compared with 70.2% for Exploring Majors. At semester four, retention for Major Pathways students was 54.5%, while Exploring Majors were at 62.7%. Table 1 demonstrates the sample size and retention percentages for the 2016-2017 cohorts.

TABLE 1
2016-2017 COHORTS OF MAJOR PATHWAYS STUDENTS AND EXPLORING MAJORS

Cohort	Fall-to-Spring Retention			Fall-to-Fall Retention		Semester 4 Retention	
	Semester 1 (n=)	Semester 2 (n=)	Retained (%)	Semester 3 (n=)	Retained (%)	Semester 4 (n=)	Retained (%)
Major Pathways	341	288	84.5%	220	64.5%	186	54.5%
Exploring Major	319	287	90.0%	224	70.2%	200	62.7%

Exploring Majors and Major Pathways students are highly encouraged to declare a major by the time 48 credits are reached, which is typically at the end of semester four if the students have been enrolled in at least twelve credits per semester. As students begin to switch their majors, the responsibilities for retention fall under the colleges for which they declare and completely transition. Even when they transition to another college, the ASC continues to track their progress.

Second Year

After the pilot year, ASC staff focused on data from the first cohort to determine programmatic changes. In 2017, the staff implemented a retention plan based on early and consistent outreach, a retooled new student orientation, proactive advising, and a specific first-year seminar. The Major Pathways students were block enrolled into the ASC’s first-year seminar. Cohorts also had ready access to other ASC resources such as free-of-charge tutoring, supplemental instruction, and academic success coaching. The staff posited that since the population would now undergo a more comprehensive retention model under their guidance, they would see a bump in retention. In addition, an increase in the amount of Major Pathways students was anticipated now that the process was more systematic and students were manually placed in the program.

The number of students increased for the Fall 2017 cohort, with 460 students matriculating into the Major Pathways program (Business: n=145, Engineering: n=123, Science: n=192). As with the first year, the cohort was almost evenly distributed between male and female students, although this year saw the female students (n=240) more numerous than their male counterparts (n=220). IPEDS race/ethnicity also remained fairly similar to the first year, although there was an increase in underrepresented groups when compared with the prior year: Asian: 14.8% (n=68), Black/African American: 9.3% (n=43), Hispanic: 45.2% (n=208), Native Hawaiian or Other Pacific Islander: 0.7% (n=3), Two or More Races: 10.7% (n=49), White: 18.3% (n=84), Other/Unknown: 0.4% (n=2). The Fall 2017 Major Pathways cohort increased in the number of Pell recipients (46.3%, n=213) and self-identified as a first-generation student (62.4%, n=287).

The second year welcomed an increase in retention. Retention for the 2017 Major Pathways cohort for the second semester (fall-to-spring retention) was beginning to increase from the previous year’s 2016

Major Pathways cohort at 88.5% versus 84.5% fall-to-spring retention. Fall-to-fall retention (semester three) was slightly higher for the 2017 cohort at 70.9% compared to the 2016 cohort at 64.5%. At semester four, the 2017 cohort was retained at 9.0 percentage points higher (63.5%) than the 2016 cohort (54.5%).

When compared to Exploring Majors for the second semester, Major Pathways students closed the retention gap to 1.8 percentage points with Exploring Majors retained at 90.3% (290/321). Fall-to-fall retention (semester three) was improving also: 70.9% for Major Pathways and 72.0% for Exploring Majors. Table 2 demonstrates the sample size and retention percentages for the 2017-2018 cohorts.

TABLE 2
2017-2018 COHORTS OF MAJOR PATHWAYS STUDENTS AND EXPLORING MAJORS

Cohort	Fall-to-Spring Retention			Fall-to-Fall Retention		Semester 4 Retention	
	Semester 1 (n=)	Semester 2 (n=)	Retained (%)	Semester 3 (n=)	Retained (%)	Semester 4 (n=)	Retained (%)
Major Pathways	460	407	88.5%	326	70.9%	292	63.5%
Exploring Majors	321	290	90.3%	231	72.0%	215	67.0%

Third and Fourth Year

By the beginning of the third year of implementation (Fall 2018), the staff started to find its rhythm within the retention model which brought stronger consistency in offerings. This came at a perfect time because the student participants nearly doubled in size since the first year. The third year's Fall 2018 cohort enrolled 637 Major Pathways students (Business: n=183, Engineering: n=180, Science: n=274). The fourth year of the program held steady with 619 students in the Fall 2019 cohort (Business: n=214, Engineering: n=181, Science: n=224). Demographics among the two cohorts followed closely along the lines of the prior years. The Fall 2018 cohort enrolled 51.8% female students (n=330) while the Fall 2019 followed with 50.6% female students (n=313). When examining IPEDS race/ethnicity, the Fall 2018 cohort highly resembled the prior year: Asian: 14.6% (n=93), Black/African American: 9.7% (n=62), Hispanic: 44.4% (n=283), Native Hawaiian or Other Pacific Islander: 1.6% (n=10), Two or More Races: 11.1% (n=71), White: 17.3% (n=110), Other/Unknown: 0.3% (n=2). Compared to the prior year, the third cohort saw a decrease in the number of Pell recipient students (39.2%, n=250) and a slight increase in the percentage of students self-identifying as first-generation (64.7%, n=412). Fall 2019 demographics also followed the prior years: Asian: 16.8% (n=104), Black/African American: 12.1% (n=75), Hispanic: 41.8% (n=259), Native Hawaiian or Other Pacific Islander: 1.6% (n=10), Two or More Races: 10.7% (n=66), White: 16.8% (n=104), Other/Unknown: 0.2% (n=1). Similar to the Fall 2017 cohort, but increasing from Fall 2018, 46.7% of students (n=289) qualified as Pell recipients. Students who self-identified as first-generation decreased slightly (59.3%, n=367) from the previous three cohorts.

During the third and fourth year, the fall-to-spring retention of the cohorts began to stabilize. For the 2018 Major Pathways cohort, the fall-to-spring retention rate was 89.6% (571/637). The 2019 Major Pathways cohort's fall-to-spring retention was 89.7% (555/619) at the preliminary census date. Students in the 2019 cohort were completing their second semester as of this writing and the fall-to-fall retention will be known by September 2020.

It is in the third semester that increases in fall-to-fall retention have occurred. The 2018 Major Pathways cohort fall-to-fall retention (Semester 3) was 77.4% versus 70.9% for the 2017 cohort. When comparing the 2018 Major Pathways cohort at semester three to the 2016 Major Pathways (pilot) cohort, fall-to-fall retention has increased by 12.9 percentage points (from 64.5% to 77.4%).

Semester four is currently wrapping up for the 2018 Major Pathways cohort at this writing. Early preliminary retention numbers are showing a 16.0% increase from the 2016 cohort to the 2018 cohort (54.5% to 70.5%). Final retention for this current semester may fluctuate due to the COVID-19 pandemic that interrupted the semester. The following table demonstrates the 2018-2019 and 2019-2020 cohorts of Major Pathways students and Exploring Majors.

TABLE 3
2018-2019 AND 2019-2020 COHORTS OF MAJOR PATHWAYS STUDENTS AND EXPLORING MAJORS

Cohort	Fall-to-Spring Retention			Fall-to-Fall Retention		Semester 4 Retention	
	Semester 1 (n=)	Semester 2 (n=)	Retained (%)	Semester 3 (n=)	Retained (%)	Semester 4 (n=)	Retained (%)
2018 -2019							
Major Pathways	637	571	89.6%	493	77.4%	449	70.5%
Exploring Majors	314	295	93.9%	262	83.4%	243	77.4%
2019-2020							
Major Pathways	619	555	89.7%				
Exploring	314	284	90.4%				

An item of note in Table 3 is the substantial increase in the Fall 2018-to-Fall 2019 retention for *both* the Major Pathways students and the Exploring Majors. While the researchers posited gains for this Major Pathways’ period, a 6.5% increase (70.9% from 2017-2018 to 77.4% 2018-2019) surpassed their expectations. Juxtapositionally, the Exploring Majors received a substantial bump in Fall-to-Fall retention after being stable during 2016-2017 and 2017-2018 academic years. Further research is needed to examine what contributed to the substantial Fall 2018-to-Fall 2019 retention for both of the populations. On a larger scale, the entire campus cohort achieved an increase in Fall 2018-to-Fall 2019 retention, which also calls for further examination.

When examining the first three Major Pathways cohorts (2016, 2017, and 2018), the third semester seems to be the “tipping point” where retention shows notable increases over the prior cohort. Each year, more students are retained from their first year into their second year. Subsequently, each cohort is showing more students are retained from their second year into their third year compared to the previous cohort. While the data are still developing for the 2019 cohort, preliminary data suggest that the trend is expected to continue, but perhaps not as dramatically as some previous gains. It is worth noting that uncertainty looms for the 2019-2020 academic year data considering the COVID-19 pandemic of Spring 2020.

Overall, the university deemed the Major Pathways student retention model a notable success. Since implementing the program, the university has seen the fall-to-spring retention rates increase from its baseline 84.5% (2016-2017) to 88.5% (2017-2018) to 89.6% (2018-2019) to 89.7% (2019-2020). Further, the fall-to-fall retention rate has also increased 12.9 percentage points from 64.5% (2016-2017) to 77.4% (2018-2019). Since the first cohort, the first-year retention of Major Pathways students has rapidly increased and is approaching parity with the Exploring Majors.

From the first to the fourth cohort of the Major Pathways program, there was a shift to greater diversity of students, including increased numbers of underrepresented students. Underrepresented groups included American Indian or Native Alaskan, Asian, Black or African American, Hispanic, Native Hawaiian or other Pacific Islander, and students who reported two or more races. Over the span of the four years, with the number of Major Pathways students in the program nearly doubling, the percentage of underrepresented groups increased from 74.9% to 83.0%. Likewise, the number of Major Pathways students receiving Pell assistance increased moderately from 37.8% to 46.7% and first-generation students remained within a few percentage points from 61.6% to 59.3%. Remaining somewhat consistent, with the exception of the first year, there are slightly more female than male students enrolled in the Major Pathways program.

LIMITATIONS, FUTURE RESEARCH, AND RECOMMENDATIONS

As with most retention efforts, limitations exist for both the programmatic retention model itself and its accompanied assessments. While this study suggests that the program improved the retention of its sample population, there is no guarantee that other institutions may benefit from implementing such a

program. Higher education institutions are complex organizations that vary on numerous levels (e.g., institutional mission/vision, institutional type, public versus private, commuter versus residential, funding sources, organizational structure, shared governance, undergraduate learning outcome goals), and each institution possesses its own unique undergraduate student population. For instance, this study's university is comprised of one of the most diverse student populations in the United States (U.S. World News and World Report, 2020), and it has not been determined whether this retention model would benefit a less diverse student population.

Beyond institutional environments, there are some additional limitations to this study. The staff's assessment efforts utilized available data and analyzed student success measures. Most of the data presented throughout the study can be primarily categorized as correlative data. Although the use of experimental data may provide additional supporting data for the Major Pathways program, time constraints inhibited such measures. Further, a true experimental design was not created because the staff did not want to withhold any students (i.e., control group) from accessing programs and services that they believed would substantially help the Major Pathways students.

Since the Major Pathways program is a new and complex approach to student success, numerous opportunities for additional research exist. This study specifically addressed retention, and thus further research needs to be conducted for the other programmatic goals and sub-level goals. Further, most of the first cohort of Major Pathways students are still on their undergraduate academic journeys, thus it is important to investigate the *ongoing* retention, progression, and completion of these students. Data on time to graduation, grade point average, and decisions regarding graduate study will be insightful. Further, it would be helpful to investigate the Major Pathways students' perception of how the program helped them reach their academic goals.

Researching the participants' changes in major will be especially important. An examination of pre-college characteristics of the students (e.g., high school GPA, ACT/SAT scores) may lend insight into whether some students are prepared to move directly into a rigorous major or may need to examine alternatives. Once in the Major Pathways program, is there a difference between the students selecting one major compared to another? For example, do significant differences exist between students who initially chose Engineering as their major compared with students who initially chose Business? Is one group of students more likely to remain with the initially chosen major compared to another and, if so, why may this be the case? Did they return to their originally requested major or did they choose differently? If a student decided to change majors, is the final major somewhat related to their original choice of major, or is it in a different area of study? Researching the students' final major decision will bring further insight.

Institutions considering implementing a Major Pathways program would benefit from examining several aspects to determine the institutional climate for such a change. A key aspect will be asking whether the leadership of colleges with strict entrance requirements are amenable to partnering on implementing innovative approaches to address retention and progression. Institutions would need to understand at the outset that some students would proceed to the initially chosen major whereas others would revert to alternatives, thereby altering college enrollments. The intention would be that individual college enrollments would be composed of students more likely to succeed in the specific college, thereby improving retention and graduation rates, although enrollment numbers may decrease for that particular college, shifting to a different major. Funding formulas that incentivize retention, progression, and completion may be more likely to easily transition to Major Pathways programs, while other funding mechanisms may inhibit the implementation of such changes. A clear sense of funding formulas will be absolutely critical when considering such enrollment changes, as institutional support may be directly impacted. As previously mentioned, examining existing student populations and preparation would be necessary to determine whether a Major Pathways program would be feasible for a specific institution.

CONCLUSION

Through a partnership with three academic colleges, ASC staff members implemented a multifaceted programmatic approach to improve the retention rates of Major Pathways students. The retention model

included a strategic new student orientation process, marketing/outreach, proactive academic advising, and a specific first-year seminar. Each year of implementation (2016-2017, 2017-2018, 2018-2019, 2019-2020), the institution saw an uptick in retention. While the data is primarily correlative, evidence suggests that the institution is closing the achievement gap for Major Pathways students. Implementation of such programs will be increasingly important as enrollment of at-risk populations with varied levels of college-readiness continue to evolve. In closing, this retention model could serve as a framework for other institutions, and from a research standpoint, the information on this subpopulation could contribute to an understudied topic in the existing literature.

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