



GENERAL REPORT

August 2024

Brett Campbell

The Role of Student Momentum on Postsecondary Awards

This report identifies students' retention rates, or momentum, in Utah's public higher education institutions. Students enrolled in technical colleges and degree-granting institutions were identified as first-time students during the 2016-17 academic year in the USHE student database. At degree-granting institutions, many students leave between the first and second term, the second and third term, and the third and fifth term. Students who did not earn a certificate at a technical college stopped before progressing 25% or 75% through their specific program. Significant differences existed between students based on their start term (fall or spring), enrollment status (full-time or part-time), enrollment timing (adult learners or traditional students), and representation (underrepresented or traditionally represented students).

Key Findings

- Full-time bachelor's degree-seeking students at Utah public colleges who first enrolled in the fall term had 20% higher retention rates than those who enrolled in the spring.
- Students enrolled in one-year certificate programs at Utah public technical colleges had 9% higher persistence rates than two-year certificate programs.
- Forty-three percent of part-time students at Utah public degree-granting institutions stopped-out between the first and second term.
- The persistence rates of full-time students at Utah public technical colleges were only 3% higher than those of part-time students.
- Students of color at Utah public technical colleges had persistence rates of 6% more than traditionally represented students.
- Pacific Islanders and Native American/Alaskan Natives drop below 50% retention in Utah public degree-granting programs by the second year.
- Adult learners, aged 25 years and older, have better retention rates in four-year (52%) than in two-year (43%) and one-year programs (21%).
- Adult learners at technical colleges had persistence rates 13% greater than traditional students, or those 17 and 24 years old.
- All three retention rates predicted degree attainment.

Purpose

A college graduate who is employed full-time will earn more than someone with a high school diploma or a college dropout (Beagley and Brandley 2024; Rooney et al. 2006). College graduates have better health, lower poverty levels, unemployment, and incarceration rates (Tinto 2012). They also have higher levels of volunteerism and greater civic engagement (Barbera et al. 2020). With sufficient momentum, students are able to finish their program and benefit from these gains.

The latest national momentum metric, as measured by the retention rate, was 82% for four-year institutions and 61% for two-year institutions (US Department of Education 2019). These metrics differ beyond the institutional type. Research shows that institutions with open enrollment policies have lower retention rates than selective institutions (Crisp, Potter, and Taggart 2022). Also, students enrolled at public institutions have lower momentum than students enrolled at private institutions. Still, retention rates have improved recently, though enrollment has declined (Irwin et al. 2022; Monaghan et al. 2022).

Students who do not persist tend to drop out or stop-out by the fifth term (the beginning of the third year). How best to track these students is disputed. Some argue that the second-term retention rate is the best predictor (see Fike & Fike 2008; Habley and McClanahan 2004; Hoffman 2014). Others argue that students should be tracked between the second and third term (Herzog 2005).

With this lack of agreement, institutional leaders measure momentum according to their needs. Some monitor between the first two terms, others between the second and third, and few between the fourth and fifth. Still, some institutions, like many technical colleges, may not measure momentum. Specific factors may contribute to the choice of retention rate. For example, if most students transfer in the third term at two-year institutions, tracking student momentum between the first two terms may have a greater impact. Besides the type of institution, regional or cultural differences may influence what is reported, including metrics that can be used to expand student recruitment.

Box 1. Brief Key Terms

Adult Learners: Students who first enroll at age 25 or older.

Dropout: A student who left without an award, does not return within seven terms, and does not transfer to another public Utah institution.

Institution Type: Institutional classification by expected time to degree: two-year and four-year.

Momentum: A student's ability to persist from term to term toward earning an award. Momentum is measured via retention rate.

Persistence Mark: The percentage of a program a student completes at a technical college.

Retention Rate: The proportion of students who persist from one term to another. The most common rates are between the first and second term or between the first and third term.

Stop-out: A student who left without an award and returned within seven terms at the same institution.

Traditional Student: A student who first enrolls immediately or soon after high school, usually considered between 17 and 24 years old.

Prior Research

Research examining student momentum can be classified by two factors: student characteristics and institutional characteristics. Student characteristics include demographic differences, first-generation status, sense of belonging, and financial support. The use of momentum includes all retention rate metrics mentioned previously.

Student Characteristics

Initial research on student factors reported differences by gender, race or ethnicity, and age. Research exploring differences by gender demonstrated that female students had higher momentum than males (Crisp et al. 2022; Irwin et al. 2022). Also, younger, traditional students had higher momentum than adult learners (Kamer and Ishitani 2021). Asian Americans and white students showed high momentum, while Latinx/Hispanic students had the lowest (Baker and Robnett 2012; Hernandez & Lopez 2004).

Focusing on first-generation students, researchers found that these students were four times more likely to leave higher education (Schelbe et al. 2019). These students reported lower confidence in their ability to succeed in higher education, unfamiliarity with expectations, hesitance to participate, and more serious financial concerns (Pratt et al. 2019; Schelbe et al. 2019). Such characteristics also influence student self-efficacy, the belief that the student has the skills and knowledge to succeed in higher education (Crisp et al. 2022; Faruggia et al. 2018).

Related to self-efficacy research, interest in a student's sense of belonging has surged (Faruggia et al. 2018; Han et al. 2017; O'Keefe 2013). A student's sense of belonging has been associated with higher motivation, more academic engagement (Pedler et al. 2022; Schneider 2022), and continued momentum (Faruggia et al. 2018). Unfortunately, first-generation students report a lower sense of belonging (Pedler et al. 2022). Hernandez and Lopez showed that students who work off-campus report a lower sense of belonging, including fewer interactions with faculty and other students (2004-2005; Pratt et al. 2019). This negatively impacts students' academic momentum.

Equally important as self-efficacy, financial support, through grants and scholarships, promotes student momentum (Millea et al. 2018), whereas higher student debt is associated with higher attrition (Britt et al. 2017). Institutions with higher tuition tend to have higher student attrition (Monaghan et al. 2022). Students from low-income communities who receive scholarships have higher stop-out rates but re-enroll within three terms (Collier and McMullen 2023). Many students report financial strain as one of the most pressing reasons for considering leaving higher education prematurely (Nieuwoudt et al. 2021).

Institutional Characteristics

Researchers associate certain institution-related factors with student momentum. Institutions with smaller class sizes (Millea et al. 2018), low student-to-faculty ratios (Monaghan et al. 2022), or higher per-student instructional spending (Monaghan et al. 2022) demonstrate higher student momentum. Related, faculty who are engaging have positive interactions with students (Hoffman 2014; Turner & Thompson 2014) and promote momentum (Burke 2019; Chan & Wang 2016). Also, students who lived on campus had higher momentum than those who did not (Schudde 2011; Thomas et al. 2021; Watson & Chen 2019). Conversely, institutions with open enrollment policies have lower student momentum.

Most higher education institutions have initiatives to promote student momentum. The most common initiative is implementing developmental courses. Students who pass English and mathematics developmental courses show better momentum (Fike and Fike 2008). Similarly, the first-year seminar is common among four-year institutions. While Miller and Lesik (2014) found that these seminars were an effective tool leading to students persisting into the second year, those effects did not extend into later years. Other initiatives include peer mentoring (Spaulding 2022), pre-enrollment orientation, and tutoring (Habley and McClanahan 2004).

Several researchers have argued that these initiatives should be more effective than they are. These critics contend that these programs are inadequately tailored to meet student needs (Kezar et al. 2023; Manyanga et al. 2017)—specifically, the needs of underrepresented populations (Harris & Wood 2022), students from low-income communities (Kezar et al. 2023), and first-generation students (Schelbe et al. 2019) are often overlooked in broad-based initiatives (Manyanga et al. 2017). Another argument is that student momentum should be a campus-wide effort and included in the institution's strategic plan (Habley & McClenaghan 2004; Harris & Wood 2022; McCormick & Lucas 2014). Institutional goals used primarily as a reporting requirement lack the institutional investment in student success.

Objective

This study provides a state-level perspective of student momentum across the different higher education institutions via multiple retention rates. In addition to providing a broader perspective at the system level, it also expands the perspective beyond first-time, full-time freshmen.

The study addressed the following questions.

1. What are the retention rates, or momentum, of students across USHE?
2. How does momentum differ by student characteristics, including full-time status, adult learner, underrepresentation, and gender?
3. How does persistence differ by institutional characteristics?
4. What factors predict student momentum across USHE?

Box 2. Brief Data and Methods

This study used first-time freshmen from the Utah System of Higher Education in the 2016-17 academic year. First-time freshmen were identified by gender, race, age, and full-time status.

This cohort identified 35,395 students. Eighty-five percent enrolled at degree-granting institutions, and 15% attended technical colleges. Students whose first enrollment was in fall or spring terms were identified. Retention rates for students who earned at least one certificate or degree were calculated over three years. Summer semester enrollment at USHE degree-granting institutions was excluded from this analysis to remain consistent with other research and because a relatively small number of students enrolled.

While much of the literature focuses on institutional characteristics and initiatives, the data collected does not include institutional variables. The variables used in these analyses are predominantly student characteristics. Analyses are conducted by award type: four-year, two-year, and one-year.

See Appendix for a more detailed description of the research methods.

Results

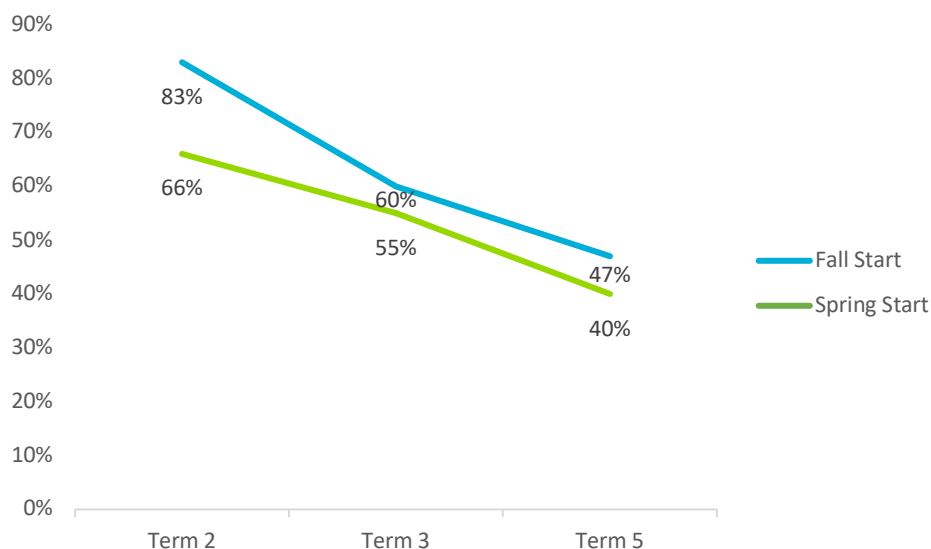
Retention rates are reported at the system level rather than the institutional level. These rates are presented by student groups and program type (one-year, two-year, and four-year). Retention rates are presented by term. Term 2 represents momentum within the first year, Term 3 represents momentum into the second year, and Term 5 represents momentum into the third year. Since USHE technical colleges do not break out instruction by term, momentum is presented separately from USHE degree-granting institutions.

Tracking students across the first three years at degree-granting institutions consistently showed a decrease in the number of students continuing their education. The retention rate started at 74% in the second term for students who began in the fall, then dropped to 53% at the beginning of the second year (Term 3), and dropped to 44% at the beginning of the third year (Term 5). Students who started in the spring are far less likely to return for their second term. Additional drops were less severe in Term 3 and Term 5. The following sections of degree-granting enrollment are broken down by program intent: four-year, two-year, and one-year.

Four-Year Programs

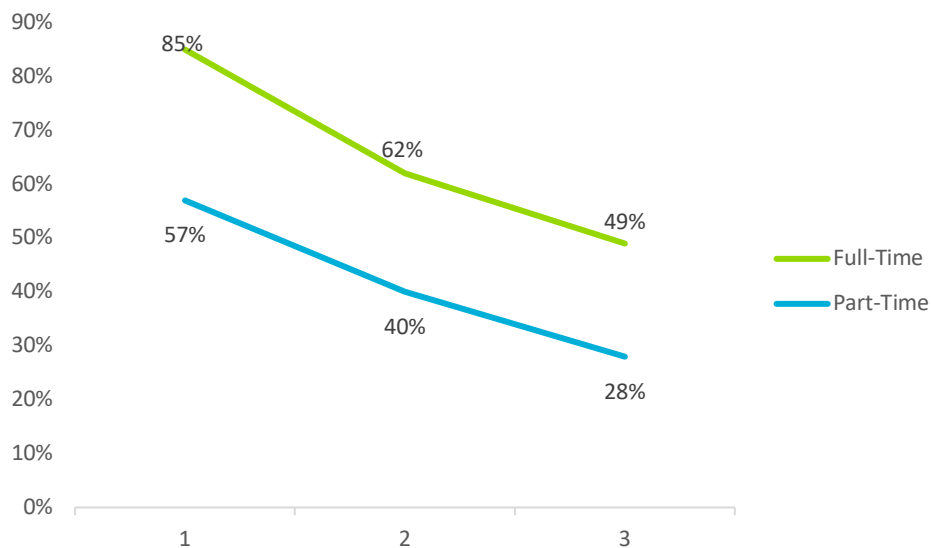
As seen in Figure 1, bachelor's degree-seeking students who began in the fall consistently had higher momentum than those who started in the spring. Compared to the few students who started in the fall and did not return in the second term, almost one-half of the students who began in the spring did not persist in the second term. However, a higher percentage of students enrolled in the fall left between the second and third terms. This finding may indicate that summer break negatively impacts student momentum. The proportion of students who do not persist after the first summer is approximately the same, regardless of when they started.

Figure 1. The retention rates of bachelor's degree-seeking students by starting term



Full-time students had the highest retention rates over the three terms measured. Comparatively, students who began as part-time students struggled to persist. Forty-three percent of part-time students enrolled in four-year programs stopped-out between the first and second term. By the beginning of the third year, only 28% of part-time students remained. To summarize, both full-time students and students who began in the fall had consistently higher retention rates than part-time students or students who started in the spring.

Figure 2. The retention rates of bachelor’s degree-seeking students by enrollment status



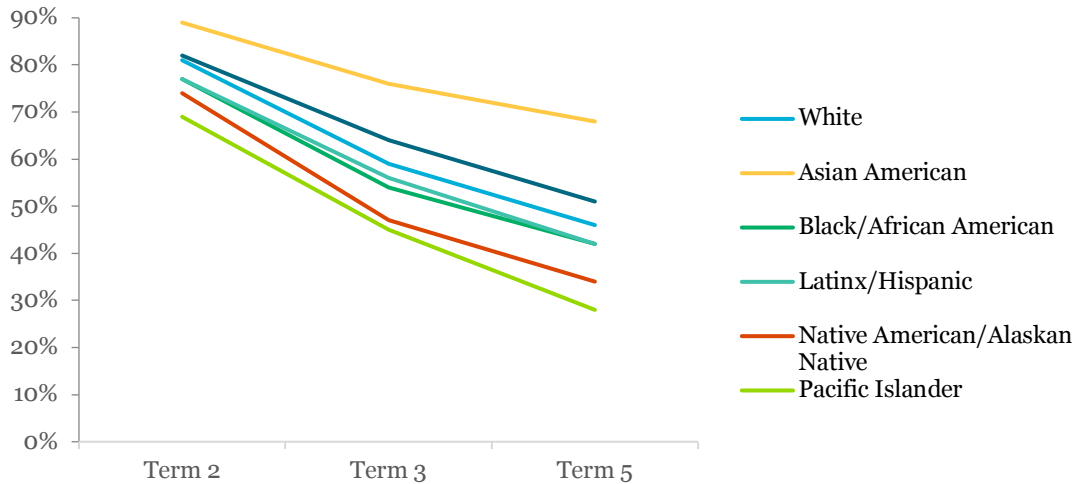
Differences between female and male students were minor. Both groups had high retention rates between the first and second terms. Slightly fewer female students enrolled at the beginning of the second year (Term 3) than males, but similar loss levels existed at the start of the third year (Term 5).

Table 1. Momentum as retention rates by term by gender

Gender	Term 2	Term 3	Term 5
Female	82%	58%	45%
Male	80%	61%	48%

Examining differences by race or ethnicity showed that Asian American students and those who identified as two or more racial or ethnic identities had the highest momentum. Conversely, Native American/Alaskan Native and Pacific Islander students had the lowest retention rates across all metrics. The proportion of students who persist according to racial or ethnic identification does not vary across the time measured.

Figure 3. Retention rates by term and racial or ethnic identity.



*Values are available in the Appendix

Examining the same group by representation provides a perspective different from race or ethnicity. Underrepresented students consist of Black/African American, Latinx/Hispanic, Native American/Alaskan Native, Pacific Islander, and students who identify with two or more races or ethnic groups. Traditionally represented students comprise white and Asian American students. The retention rates of traditionally represented students parallel those of white students, while underrepresented students parallel Latinx/Hispanic students. Students who identify with two or more races or ethnicities persist well into Term 5.

Table 2. Retention rates by representation term

Student	Term 2	Term 3	Term 5
Traditionally Represented	81%	59%	46%
Underrepresented	77%	56%	43%

Adult learners had lower retention rates than traditional students. A far smaller proportion of adult learners persisted between the first and second terms than traditional students. However, adult students had proportionally higher persistence going into the third term and lower momentum between the third and fifth terms.

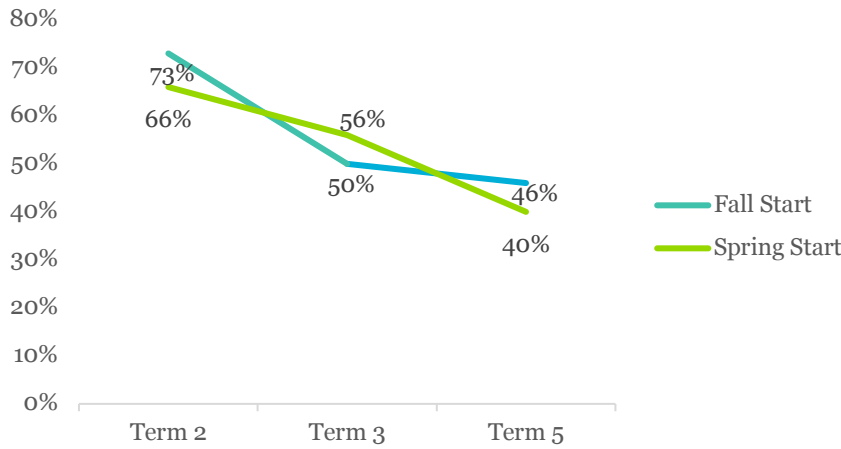
Table 3. Retention rates of adult learners compared to traditional students by term

Student	Term 2	Term 3	Term 5
Adult Learners	68%	51%	38%
Traditional Students	81%	60%	47%

Two-Year Programs

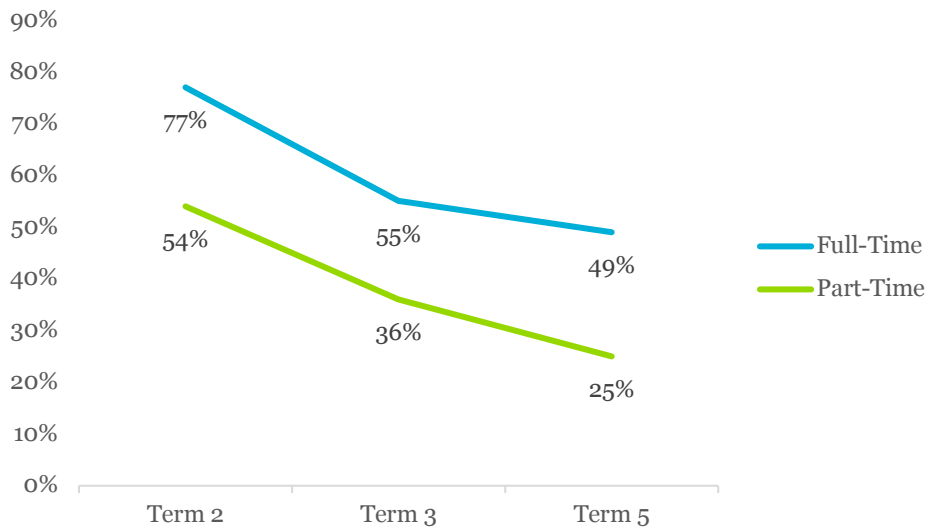
Two-year programs include associate degrees and certificates that require at least 900 credit hours or take more than one academic year to complete. Retention rates were lower for two-year programs than for four-year programs. This finding was consistent across all student characteristics and retention rates.

Figure 4. Retention rates by first term enrolled



Like four-year programs, students who enrolled in the fall had higher momentum than those who enrolled in the spring (see Figure 3). Also, the retention rate flattened for fall enrollees between the second and third terms. The difference between fall and spring enrollees was smaller at the end of the first year for two-year programs. Full-time enrollee momentum was far higher than those initially enrolled as part-time students. Only one in four part-time students progressed to the third year, indicating that they did not complete their program within two years and chose to continue.

Figure 5. Retention rates by student status (full-time vs. part-time)



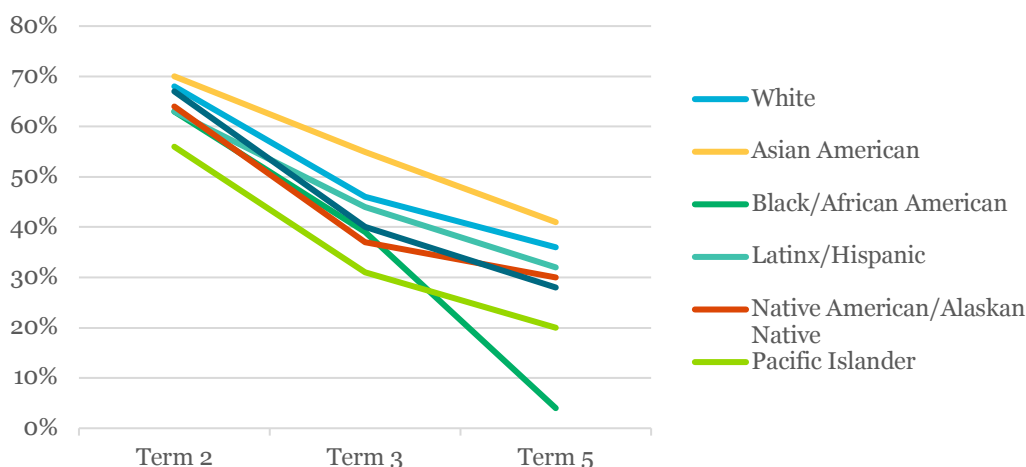
Similar to four-year programs, females had higher momentum than males. In two-year programs, the difference between female and male students was slightly larger, with a six-point gap between terms two and three, compared to the smaller point gaps in four-year programs. Term 5 retention rates had even higher differences. Male students in two-year programs appear to lose momentum when they cannot complete their program within two years.

Table 4. Momentum for programs at two-year programs by gender

Gender	Term 2	Term 3	Term 5
Female	71%	52%	48%
Male	65%	46%	32%

Like four-year programs, Asian American and white students demonstrated high momentum. Pacific Islander students had lower momentum after the second term. Asian American students consistently experienced a decline in momentum across the three retention rates, although their retention was not as low as other groups. On the other hand, Black/African American students had a sharper drop between the third and fifth terms. The remaining students showed a sharper loss of momentum between the second and third terms than between the second and third terms.

Figure 6. Momentum for programs at two-year programs by racial or ethnic identity. *Values are available in the Appendix



When examining retention rates by representation, traditionally represented students parallel white students, and underrepresented students have lower retention rates each term. The retention rates for the two-year programs were lower than those for students enrolled in four-year programs.

Table 5. Retention rates by underrepresented status

Student	Term 2	Term 3	Term 5
Traditionally Represented	68%	46%	36%
Underrepresented	63%	42%	28%

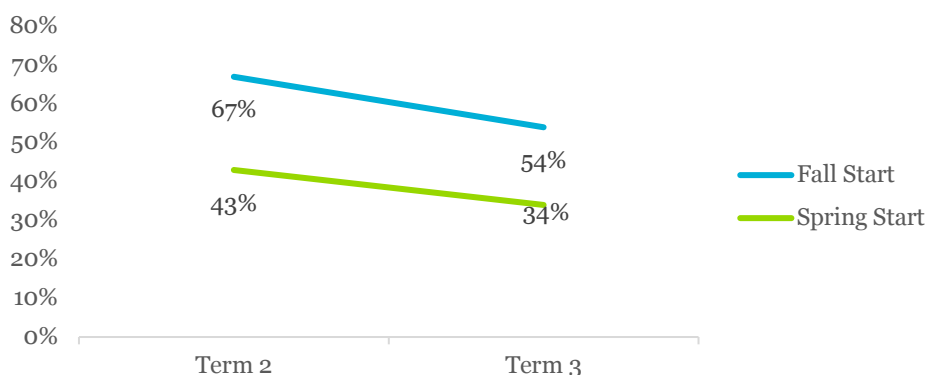
Adult learners in two-year programs have less momentum across the three points than those enrolled in four-year programs. The retention rates are also lower for two-year programs than those enrolled in four-year programs for both adult learners and traditional students.

Table 6. Momentum as retention rates by adult learners and traditional students

Student	Term 2	Term 3	Term 5
Adult Learner	61%	41%	30%
Traditional Student	69%	48%	45%

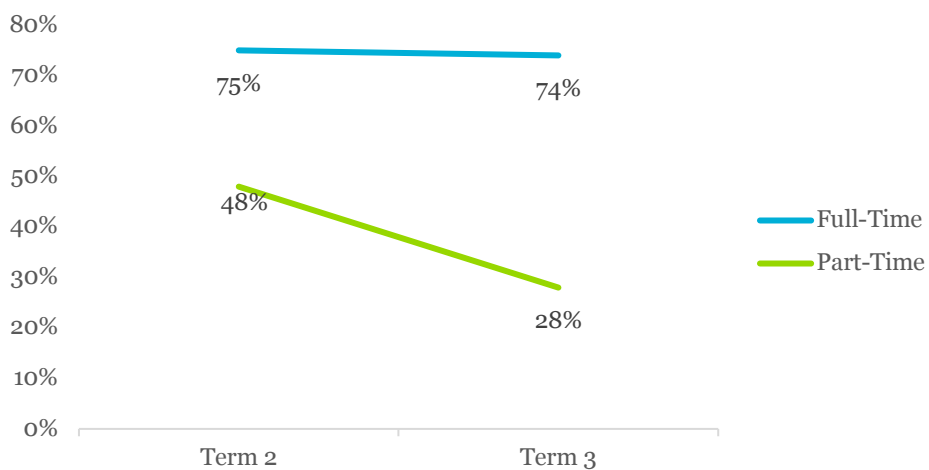
One-Year Programs

Figure 7. Momentum as retention rates by initial enrollment



The number of students enrolled in one-year programs at degree-granting institutions was small, so this data is presented in aggregate when necessary. Additionally, the program duration was designed to last one year; data from the fifth term will not be shown. Students who enrolled in the fall showed higher momentum than those who enrolled in the spring, and full-time students demonstrated far higher retention rates than part-time students.

Figure 8. Momentum as retention rates by student status



Female students had higher retention rates than men in both metrics, as seen in Table 7. Because only a few students of specific races enrolled in one-year certificate programs, students were grouped as traditionally represented and underrepresented instead of by race or ethnicity. Underrepresented students had higher retention rates than traditionally represented students. Latinx/Hispanic students, as part of the underrepresented group, consistently had the highest momentum.

Table 7. Retention rates at one-year programs by gender and ethnic or racial identity

Demographic	Term 2	Term 3
Female	67%	57%
Male	53%	39%
Traditionally Represented	49%	23%
Underrepresented	53%	30%

Adult Learners did not persist as well as traditionally represented students, particularly when the program extended beyond the intended one year. Their retention rates were among the lowest of all groups, with only part-time students in the second term having lower retention rates.

Table 8. Retention rates of traditionally represented students and adult learners

Student	Term 2	Term 3
Adult Learner	64%	18%
Traditional Student	73%	64%

Academic Awards

Additional analyses explored which retention rates and student characteristics best predicted postsecondary awards. Retention rates were better predictors of earning postsecondary awards than student characteristics.

All three retention rates predicted earning a bachelor’s degree. In addition, enrolling as a full-time student and passing all courses was the most significant contribution to earning a degree. Failing one course was the most significant encumbrance. Withdrawing from a class, identifying as a Pacific Islander, or enrolling as an adult learner also decreased the likelihood of earning a bachelor’s degree. All details of this and subsequent analyses are presented in the Appendix.

Similar to the bachelor’s degree analysis, each retention rate predicted a student’s earning an associate degree, with the second-term retention rate being a slightly better predictor. Failing a course was the biggest hindrance to earning an associate degree. Enrolling as an adult learner also decreased the likelihood of earning an associate degree, and students who identify as Black/African American or Pacific Islander were less likely to earn an associate degree.

Two models were examined for certificate-seeking students. The first two retention rates were the best predictors of award attainment for students seeking two-year certificates. Students who identified as male or Asian American were more likely to earn a two-year certificate. Adult learners, students who identified as Pacific Islanders, and students who failed at least one course were less likely to earn a two-year certificate. Only the second-year retention rate predicted award attainment for students enrolled in a one-year certificate program, as the third-year retention rate was excluded here. Since many of these students enrolled part-time, they required more than one year to earn a one-year certificate.

Technical Colleges

Utah’s public technical colleges do not separate academic pathways by terms like degree-granting institutions, so the proportion of the expected program hours is reported. Both one-year and two-year certificates had a 73% completion rate. Seventy-three percent of students enrolled in USHE technical colleges earned certificates. Of those, 72% of part-time and 75% of full-time students earned certificates.

Table 9. The proportion of students earning a certificate by status and IPEDS certificate classification

Status	Certificate	Proportion
Part-time	1-Year	80%
	2-Year	61%
Full-time	1-Year	85%
	2-Year	67%

Like degree-granting institutions, momentum differed by enrollment status and program length. Of the part-time students who did not finish their one-year program, 64% persisted through half of the program before stopping-out (see Table 10). Seventy-one percent of full-time students enrolled in one-year programs who did not finish persisted through at least one-half of their program. Similarly, most students enrolled in two-year programs persisted through one-half of the program (part-time (65%) and full-time (61%)).

Table 10. The proportion of students who progress through a program but do not finish by enrollment status

Status	Certificate	75% +	50 – 74%	25 – 49%	< 25%
Part-time	1-Year	36%	28%	28%	8%
	2-Year	21%	44%	23%	12%
Full-time	1-Year	29%	42%	19%	9%
	2-Year	18%	43%	22%	18%

Sixty percent of male and 54% of female students earned a certificate. Slightly more male students earned a one-year certificate (68%) than female students (66%). For two-year programs, the attainment rate was 41%, irrespective of gender.

Table 11. The proportion of student persistence through a program but did not finish by gender

Gender	Certificate	75% +	50 – 74%	25 – 49%	< 25%
Female	1-Year	38%	27%	21%	14%
	2-Year	16%	43%	24%	17%
Male	1-Year	33%	32%	31%	4%
	2-Year	25%	45%	20%	10%

Among those who did not earn a certificate, the gender breakdown showed that most male students (67%) persisted through at least one-half of their program. For male students enrolled in one-year programs,

only 35% left before reaching the halfway point. Similarly, almost two-thirds (65%) of female students in one-year programs persisted through at least one-half of their program. Non-completing female students reached across various programs, except the Certified Nursing Program (CNA), where 91% earned a certificate.

Due to the low enrollment rate of specific racial groups in one-year certificate programs, students were categorized as traditionally represented or underrepresented students. Underrepresented students had higher attainment rates than traditionally represented students for both one and two-year certificate programs.

Table 12. The proportion of students who earn certificates for underrepresented and traditionally represented students

Race/Ethnicity	Certificate	
	1-Year	2-Year
Traditionally Represented	66%	37%
Underrepresented	72%	53%

When breaking down stop-outs by representation, traditionally represented students were evenly distributed at the one-fourth, one-half, and three-fourths persistence marks (see Table 13). The largest proportion of underrepresented students reached the three-fourths persistence mark, with fewer leaving at the one-half persistence mark and even fewer at the one-fourth persistence mark. Only 9% of underrepresented students completed less than one-fourth of their one-year program. Underrepresented and traditionally represented students had similar persistence rates in two-year certificate programs. Most students completed at least one-half, but approximately 20% finished three-fourths of their program. Underrepresented students progressed slightly better at one-half and three-fourths persistence marks.

Table 13. The proportion of students who progress through a program but did not finish by representation

Race/Ethnicity	Certificate	75% +	50 – 74%	25 – 49%	< 25%
Traditionally Represented	1-Year	33%	30%	29%	8%
	2-Year	19%	43%	24%	14%
Underrepresented	1-Year	41%	31%	20%	9%
	2-Year	21%	47%	17%	15%

Traditional students were more successful than adult learners in earning certificates. However, adult learners progressed further among those who did not complete the program. For one-year programs, 65% of traditional students earned a certificate, while 34% completed two-year programs. The highest proportion of certificate earners were adult learners in one-year programs, with 72% earning certificates.

Both adult learners and traditional students enrolled in one-year programs either nearly completed (see Table 14). Eighty-three percent of adult learners advanced beyond the one-half persistence mark.

Table 14. The proportion of students who progress through a program but did not finish by student classification

Learner	Certificate	75% +	50 – 74%	25 – 49%	< 25%
Adult Learner	1-Year	50%	28%	21%	2%
	2-Year	28%	64%	7%	1%
Traditional Student	1-Year	29%	31%	29%	11%
	2-Year	18%	39%	26%	17%

Momentum was not a predictor for students who sought and earned a one-year certificate at technical colleges. However, it did predict completion for those pursuing two-year certificates. Just the same, it may be suggested that students at USHE technical colleges may need more support or follow-up during the second half of their program. Detailed statistical analysis can be found in the Appendix.

Limitations

The first limitation concerns tracking students enrolled at USHE technical colleges. Technical college data included only initial enrollment through the first award date by program cluster. This means students who transferred to a different program cluster could be included as students who stopped-out, which may artificially raise the number of students who did not complete technical college.

The second limitation was that most of these analyses were descriptive and did not identify causal relationships. Graphs and descriptions may imply causal relationships; however, statistical analyses demonstrating causality were not conducted. Additional research is necessary to establish any causal relationship.

The third limitation is that specific demographic data, including low economic status or first-generation students, were unavailable. Analyses that should have included these demographics were not possible. These students face additional challenges beyond the ability to pay tuition and fees including the need for greater academic capital or the knowledge and ability to maneuver the higher education environment (Collier and McMullen 2023; Kamer and Ishitani 2024; Pratt et al. 2019). This, in turn, would affect these students' sense of belonging (Pedler et al. 2022). Access to these identifying characteristics was not available.

Finally, this data focuses on students who attended public higher education institutions and should be considered a subset of the total state student population. Students who attended private higher education institutions were not included, nor were those who attended online institutions. Approximately 39% of Utah's college students attend private institutions (Chingos 2017). Additionally, the United States Department of Education reported that approximately 20% of students in four-year and 41% of students in two-year degree programs attend online (NCES 2022).

Implications

Determining the best retention rate depends on how students are classified. If only one rate were chosen, the second-year retention rate might be the best option when tracking four-year degree seekers, but two-year programs differ by the award sought, so different retention rates are used. When a student pursues an associate degree, the second-term retention rate is better, but the second-year retention rate is

preferable for two-year certificate programs. Tracking students with both second-term and second-year metrics would provide more support for students enrolled in bachelor's and two-year certificate programs. Circumstances may differ according to the characteristics of individual institutions.

USHE technical colleges successfully moved students toward completion, with almost three out of four students earning certificates. Most students were close to finishing their one-year program if they did not finish within the time frame of this study. One difference between technical colleges and degree-granting institutions is that part-time status is not a barrier for technical college students.

Failing at least one course, regardless of the award length, interfered with earning an award. For four-year degree-seeking students, failing one course decreased their likelihood of completion by 83%. For students seeking two-year awards, failing a course reduced the possibility of earning an associate degree by 59% and 52% for two-year certificates. Withdrawing from a course has less of an attenuating effect.

Withdrawing from at least one course decreased the likelihood of bachelor's degree-seeking (35%) and two-year certificate-seeking students (33%) earning an award. Several needs have been identified that impact momentum, including the quality of instruction (Barbera et al. 2020; Burke 2019; Hoffman 2014), student sense of belonging (Pedler et al. 2022; Pratt et al. 2019; Schneider 2022; Xu 2017), and academic capital—understanding the higher education environment and expectation management (Crissman Ishler et al. 2005; Pleitz et al. 2015; Schelbe et al. 2019). University initiatives that facilitate a student's sense of belonging (Farruggia et al. 2018; Han et al. 2017; O'Keefe 2013) and academic capital facilitate student momentum (Crissman Ishler et al. 2005; Schudde 2011; Thomas et al. 2021).

Student demographics also affect award attainment. Almost one-half of part-time students, those who start in the spring, and adult learners stop-out between the first and second terms at degree-granting institutions. Latinx/Hispanic and Black/African American students also drop below 50% at the beginning of Term 2. Similarly, Pacific Islanders and Native American/Alaskan Natives drop to approximately 30% by the start of the second year.

The low number of degree-seeking students in the fifth term does not correspond with the higher number of USHE graduates (USHE 2024). The first explanation may be that students stopped-out in the second or third year and returned later to finish within six years. More research exploring student stop-out or re-enrollment among USHE institutions is needed. A second explanation could be that students take classes at one institution and then graduate at another USHE institution. A recent study identified that student transfer among Utah students is above the national average (Campbell 2024). Many students enroll in online institutions to accommodate financial or familial obligations (Chingos 2017). They may then re-enroll and finish at a USHE institution.

The momentum of each student population needs further investigation to better identify their needs and potential solutions. For example, little is known about adult learners and their specific needs due to the lack of research. Additional research would provide higher education staff with insights on effectively supporting adult learners.

References

- Baker, Christina N., and Belinda Robnett. "Race, social support and college student retention: A case study." *Journal of College Student Development* 53, no. 2 (2012): 325–335.
- Barbera, Salvatore A., Steven David Berkshire, Consuelo B. Boronat, and Michael H. Kennedy. "Review of undergraduate student retention and graduation since 2010: Patterns, predictions, and recommendations for 2020." *Journal of College Student Retention: Research, Theory & Practice* 22, no. 2 (2020): 227–250.
- Beagley, Melanie, and Andrea Thomas Brandley. "The value of higher education: Policy brief." Kem C. Gardner Policy Institute (2024). <https://d36oiwf74r1rap.cloudfront.net/wp-content/uploads/2024/02/HigherEd-PB-Feb2024.pdf>
- Britt, Sonya L., David Allen Ammerman, Sarah F. Barrett, and Scott Jones. "Student Loans, Financial Stress, and College Student Retention." *Journal of Student Financial Aid* 47, no. 1 (2017): 3.
- Burke, Adam. "Student retention models in higher education: A literature review." *College and University* 94, no. 2 (2019): 12–21.
- Campbell, Brett D. Student Transfers: Strategy or Frustration. Utah System of Higher Education. (2024).
- Chan, Hsun-yu, and Xueli Wang. "Interact for what? The relationship between interpersonal interaction based on motivation and educational outcomes among students in manufacturing programs at two-year technical colleges." *Community College Review* 44, no. 1 (2016): 26-48.
- Chingos, Matthew M. "Don't forget private, non-profit colleges." (2017). <https://www.brookings.edu/articles/dont-forget-private-non-profit-colleges/>
- Collier, Daniel A., and Isabel McMullen. "Sometimes a long and winding road: An exploration of Kalamazoo Promise stop out and reenrollment." *Journal of College Student Retention: Research, Theory & Practice* 24, no. 4 (2023): 883–908.
- Crisp, Gloria, Charlie Potter, and Amanda Taggart. "Characteristics and predictors of transfer and withdrawal among students who begin college at bachelor's granting institutions." *Research in Higher Education* 63, no. 3 (2022): 481–513.
- Crissman Ishler, Jennifer L., and M. Lee Upcraft. "The keys to first-year student persistence." *Challenging and supporting the first-year student: A handbook for improving the first year of college* (2005): 27–46.
- Farruggia, Susan P., Cheon-woo Han, Lakeshia Watson, Thomas P. Moss, and Bette L. Bottoms. "Noncognitive factors and college student success." *Journal of College Student Retention: Research, Theory & Practice* 20, no. 3 (2018): 308–327.
- Fike, David S., and Renea Fike. "Predictors of first-year student retention in the community college." *Community College Review* 36, no. 2 (2008): 68-88.
- Habley, Wesley R., and Randy McClanahan. "What works in student retention." *Iowa City, IA: American College Testing Service* (2004).
- Harris III, Frank, and J. Luke Wood. "San Diego State University Community College Equity Assessment Lab." (2022).
- Han, Cheon-woo, Susan P. Farruggia, and Thomas P. Moss. "Effects of academic mindsets on college students' achievement and retention." *Journal of College Student Development* 58, no. 8 (2017): 1119-1134.
- Hernandez, John C. "Leaking pipeline: Issues impacting Latino/a college student retention." *Minority Student Retention* (2019): 99–122.
- Hernandez, John C., Mark A. Lopez. "Leaking pipeline: Issues impacting Latino/a college student retention." *Journal of College of Student Retention* 6, no 1(2004-2005): 37-60.
- Hoffman, Elin Meyers. "Faculty and student relationships: Context matters." *College Teaching* 62, no. 1 (2014): 13–19.

- Irwin, Véronique, Josue De La Rosa, Ke Wang, Sarah Hein, Jijun Zhang, Riley Burr, Ashley Roberts et al. "Report on the Condition of Education 2022. NCES 2022-144." *National Center for Education Statistics* (2022).
- Kamer, Jacob A., and Terry T. Ishitani. "First-year, nontraditional student retention at four-year institutions: How predictors of attrition vary across time." *Journal of College Student Retention: Research, Theory & Practice* 23, no. 3 (2021): 560–579.
- Kezar, Adrianna, Joseph A. Kitchen, Hilary Estes, Ronald Hallett, and Rosemary Perez. "Tailoring programs to best support low-income, first-generation, and racially minoritized college student success." *Journal of College Student Retention: Research, Theory & Practice* 25, no. 1 (2023): 126–152.
- Manyanga, Fidelis, Alec Sithole, and Shawn M. Hanson. "Comparison of Student Retention Models in Undergraduate Education from the Past Eight Decades." *Journal of Applied Learning in Higher Education* 7 (2017): 30–42.
- McCormick, Nancy J., and Marva S. Lucas. "Student retention and success: Faculty initiatives at Middle Tennessee State University." *Journal of Student Success and Retention* 1, no. 1 (2014).
- McFarland, Joel, Bill Hussar, Jijun Zhang, Xiaolei Wang, Ke Wang, Sarah Hein, Melissa Diliberti, Emily Forrest Cataldi, Farrah Bullock Mann, and Amy Barmer. "The Condition of Education 2019. NCES 2019-144." *National Center for Education Statistics* (2019).
- Millea, Meghan, R. Wills, Anastasia Elder, and Danielle Molina. "What matters in college student success? Determinants of college retention and graduation rates." *Education* 138, no. 4 (2018): 309–322.
- Miller, John W., and Sally S. Lesik. "College persistence over time and participation in a first-year seminar." *Journal of College Student Retention: Research, Theory & Practice* 16, no. 3 (2014): 373–390.
- Monaghan, David B., and Olivia K. Sommers. "And now for some good news: Trends in student retention at community colleges, 2004–2017." *Research in Higher Education* (2022): 1–28.
- Nieuwoudt, Johanna E., and Megan L. Pedler. "Student retention in higher education: Why students choose to remain at university." *Journal of College Student Retention: Research, Theory & Practice* 25, no. 2 (2023): 326–349.
- O'Keefe, Patrick. "A sense of belonging: Improving student retention." *College Student Journal* 47, no. 4 (2013): 605–613.
- Pedler, Megan Louise, Royce Willis, and Johanna Elizabeth Nieuwoudt. "A sense of belonging at university: Student retention, motivation and enjoyment." *Journal of Further and Higher Education* 46, no. 3 (2022): 397–408.
- Pleitz, Jacob D., Alexandra E. MacDougall, Robert A. Terry, M. Ronald Buckley, and Nicole J. Campbell. "Great expectations: Examining the discrepancy between expectations and experiences on college student retention." *Journal of College Student Retention: Research, Theory & Practice* 17, no. 1 (2015): 88–104.
- Pratt, Ian S., Hunter B. Harwood, Jenel T. Cavazos, and Christopher P. Ditzfeld. "Should I stay or should I go? Retention in first-generation college students." *Journal of College Student Retention: Research, Theory & Practice* 21, no. 1 (2019): 105–118.
- Rooney, Patrick, William Hussar, Michael Planty, Susan Choy, Gillian Hampden-Thompson, Stephen Provasnik, and Mary Ann Fox. "The Condition of Education, 2006. NCES 2006-071." *National Center for Education Statistics* (2006).
- Schelbe, Lisa, Martin Swanbrow Becker, Carmella Spinelli, and Denesha McCray. "First generation college students' perceptions of an academic retention program." *Journal of the Scholarship of Teaching and Learning* 19, no. 5 (2019).
- Schneider, David E. "Understanding and Improving Community College Student Retention: A Review with Recommendations for Developing Institutional Attachment." *Community College Enterprise* 28, no. 1 (2022).
- Schudde, Lauren T. "The causal effect of campus residency on college student retention." *The Review of Higher Education* 34, no. 4 (2011): 581–610.

- Spaulding, Dean T., Jelane A. Kennedy, Amanda Rózsavölgyi, and Wilfredo Colón. "First-Year STEM Students' Satisfaction with Peer Mentoring: A Predictor for Student Retention." *Journal of Research in STEM Education* 8, no. 1 (2022): 24-34.
- Thomas, Nathaniel S., Peter B. Barr, Derek L. Hottell, Amy E. Adkins, and Danielle M. Dick. "Longitudinal influence of behavioral health, emotional health, and student involvement on college student retention." *Journal of College Student Development* 62, no. 1 (2021): 2-18.
- Tinto, Vincent. "Enhancing student success: Taking the classroom success seriously." *Student Success* 3, no. 1 (2012): 1.
- Turner, Patrick, and Elizabeth Thompson. "College retention initiatives meeting the needs of millennial freshman students." *College Student Journal* 48, no. 1 (2014): 94-104.
- U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Spring 2022, Fall Enrollment component.
<https://nces.ed.gov/fastfacts/display.asp?id=80>
- Utah System of Higher Education, Completions. (2024). <https://ushe.edu/institutional-data-resources-degrees-awards/>
- Watson, Aretha, and Rong Chen. "Educational opportunity fund program and community college student retention." *Journal of College Student Retention: Research, Theory & Practice* 21, no. 3 (2019): 384-406.
- Xu, Yonghong Jade. "Localizing college retention efforts: The distance between theoretical orientation and institution-specific needs." *Innovative Higher Education* 42, (2017): 49-63.

Appendix A. Methodology

Participants were identified in the USHE student database as first-time students during the 2016/2017 academic year. A total of 35,395 students were identified in this cohort. Eighty-five percent of students enrolled at degree-granting institutions, with 15% at technical colleges. Summer semester enrollment at degree-granting institutions was excluded from this analysis to remain consistent with other research and the relatively small number of students who attend (6% of the total enrollments).

Population/Student Data

From the degree-granting institutions, 30,007 students who enrolled in the 2016/2017 academic year were included. Of those, 52% were female and 49% were male. Seventy-five percent of these students were white, and 14% were Latinx/Hispanic. Four percent of this cohort identified as two or more races. Asian American, Black/African American, and Pacific Islander students consisted of 2% each. Native American/Alaskan Native students comprised 1%. Seventy-four percent of students first enrolled as full-time students, with 26% starting as part-time students. Eight percent started as adult learners.

Table A1. Momentum for programs at four-year programs by racial or ethnic identity

	Term 2	Term 3	Term 5
White	81%	59%	46%
Asian American	89%	76%	68%
Black/African American	77%	54%	42%
Latinx/Hispanic	77%	56%	42%
Native American/Alaskan Native	74%	47%	34%
Pacific Islander	69%	45%	28%
Two or more	82%	64%	51%

Most of the 5,388 students enrolled at the technical colleges were male (56%, female 44%). These students mainly identified as white (74%) or Latinx/Hispanic (19%). Black/African Americans and students who identified as two or more races comprised 2% each. The remaining (Asian Americans, Native American/Alaskan Native, and Pacific Islander) comprised 1% each. Most technical college students enrolled part-time (70%, 30% full-time). Almost one in three (31%) enrolled as adult learners.

Table A2. Momentum for programs at two-year programs by racial or ethnic identity

	Term 2	Term 3	Term 5
White	68%	46%	36%
Asian American	70%	55%	41%
Black/African American	63%	39%	4%
Latinx/Hispanic	63%	44%	32%
Native American/Alaskan Native	64%	37%	30%
Pacific Islander	56%	31%	20%
Two or more	67%	40%	28%

Variables

- **Underrepresented Student:** A student who identifies as Black/African American, Latinx/Hispanic, Native American/ Alaskan Native, Pacific Islander, or two or more races or ethnic groups.
- **Academic Capital:** the knowledge and understanding a student has about the higher education environment which allows that student to manage academic and social expectations.
- **Adult Learners:** Students who first enroll at age 25 or older.
- **Dropout:** A student who left without an award, does not return within seven terms, and does not transfer to another USHE institution.
- **Institution Type:** Institutional classification by expected time to degree: two-year and four-year.
- **Momentum:** A student’s ability to persist from term to term toward earning an award. Momentum is measured via retention rates.
- **Persistence Mark:** The percentage of the program the student completes at a technical college.
- **Retention Rate:** The proportion of students who persist from one term to another. Typical rates are between the first and second term or the first and third term (second year).
- **Stop-out:** A student who left without an award and returned within seven terms at the same institution.
- **Traditionally represented student:** A student who identifies as white and Asian American students.
- **Traditional Student:** A student who first enrolls immediately or soon after high school, usually considered between 17 and 24 years old.

Methods

While much of the literature focuses on institutional characteristics and initiatives, the data collected does not include institutional variables. Analyses are conducted by award type, such as four-year, two-year, and one-year.

Bachelor Degrees

Hierarchical logistic regression was utilized to explore how student factors and retention predicted students earning awards. Students were filtered by their intended degree and whether they were awarded that degree. Five steps were included in each analysis. The first was student demographics: gender, race, Pell Grant eligibility, and adult learner status. The second step represented student behavior, including part-time or full-time status, failing a class, earning a “D” in a class, and withdrawing. The remaining steps explored student momentum into the second term, the second year (Term 3), and the third year (Term 5).

Table A3. Beta weights of logistic hierarchal regression for bachelor’s degree-seeking students

Variable	Step 1	Step 2	Step 3	Step 4	Step 5
Male	0.10**	0.34***	0.41***	0.31***	0.31***
Asian American	0.56***	0.58***	0.48***	0.27*	0.06
Black/African American	-0.23	0.05***	0.13	0.21	0.14
Latinx/Hispanic	-0.39***	-0.17**	-0.13	-0.18**	-0.25***
Native American/Alaskan Native	-0.42	-0.05	0.08	0.17	0.17
Pacific Islander	-0.82***	-0.58**	-0.43	-0.38	-0.23
Two or more races	0.10	0.25**	0.27**	0.21*	0.15
Pell eligible	-0.46***	-0.38***	-0.36***	-0.39***	-0.35***
Adult learner	-0.88***	-0.48***	-0.44***	-0.60***	-0.68***
Full-time		1.57***	0.30	1.19***	1.16***
Failed class		-1.30***	-1.32***	-1.31***	-1.28***
Earned a “D”		-0.15***	-0.28***	-0.43***	-0.53***
Withdrew		-0.17***	-0.18***	-0.35***	-0.43***
Second Term			2.21***	0.86***	0.72***
Second Year				2.11***	0.77***
Third Year					2.18***
χ^2	369.51***	2089.54***	1319.97***	1836.70***	1625.85***
Nagelkerke R²	0.03	0.21	0.31	0.42	0.52
ΔR^2		0.18	0.10	0.11	0.10

*p < .05, **p < .01, ***<.001

Each of the five steps of the bachelor’s degree earners model was statistically significant. When momentum is not included in the model, the best positive predictors of earning a degree were enrolling full-time and identifying as Asian American. Factors that suppressed earning a degree included failing at least one class and enrolling as an adult learner. The model changed significantly once the retention rates were included in the analysis. Students who persist past their first year are eight times more likely to earn a degree. The Naglekerke pseudo-R² started small but increased rapidly with each additional step of student behavior. Both beta weights and the Nagelkerke pseudo-R² are found in Table A3, while the odds ratios for each variable at each stage are presented in Table A4.

Table A4. Odds ratios of the bachelor’s degree-seeking students by each step in the hierarchal logistic model

Variable	Step 1	Step 2	Step 3	Step 4	Step 5
Male	1.11	1.40	1.50	1.36	1.36
Asian American	1.75	1.79	1.62	1.31	1.07
Black/African American	0.75	1.05	1.14	1.23	1.15
Latinx/Hispanic	0.67	0.85	0.88	0.83	0.78
Native American/ Alaskan Native	0.66	0.95	1.09	1.18	1.19
Pacific Islander	0.44	0.56	0.65	0.69	0.79
Two or more races	1.11	1.28	1.30	1.23	1.16
Pell eligible	0.63	0.68	0.69	0.68	0.71
Adult learner	0.41	0.62	0.64	0.55	0.51
Full-time	0.66	0.30	0.30	0.30	0.31
Failed class		0.21	0.27	0.27	0.28
Earned a “D”		0.86	0.75	0.65	0.59
Withdrew		0.84	0.84	0.70	0.65
Second Term			9.13	2.37	2.05
Second Year				8.24	2.16
Third Year					8.83

Associate Degrees

Table A5. Beta weights of logistic hierarchal regression for associate-seeking students

Variable	Step 1	Step 2	Step 3	Step 4	Step 5
Male	-0.40***	-0.27***	-0.22***	-0.28***	-0.32***
Asian American	0.06	0.15	0.15	0.04	0.03
Black/African American	-0.81***	-0.54**	-0.48*	-0.47*	-0.46*
Latinx/Hispanic	-0.54***	-0.27***	-0.22***	-0.29***	-0.31***
Native American/ Alaskan Native	-0.48**	-0.32	-0.24	-0.16	-0.21
Pacific Islander	-0.89***	-0.78***	-0.65***	-0.53**	-0.44*
Two or more races	-0.47***	-0.39**	-0.37**	-0.29	-0.27
Pell eligible	-0.01	-0.10*	-0.14**	-0.14**	-0.11*
Adult learner	-0.64***	-0.48*	-0.51**	-0.60***	-0.68***
Full-time		1.01***	0.74***	0.78***	0.89***
Failed class		-1.30***	-1.30***	-1.32***	-1.34***
Earned a “D”		0.23***	0.04	-0.08	-0.17**
Withdrew		-0.24***	-0.26***	-0.36***	-0.46***
Second Term			1.80***	0.88***	0.83***
Second Year				1.58***	1.13***
Third Year					1.15***
χ^2	303.09***	1247.05***	925.71***	809.65***	385.03***
Nagelkerke R ²	0.04	0.18	0.27	0.35	0.38
ΔR^2		0.14	0.09	0.08	0.03

*p < .05, **p < .01, ***<.001

Similar to the bachelor’s degree model, each step of the associate degree model was significant. Prior to adding retention rates to the model, positive predictors were identifying as Asian American and earning a “D” in at least one class. It is possible that earning a “D” could indicate that a student is adjusting their approach to preparing for a class or test. This grade might be considered a “near-miss.” Comparatively, failing at least one course was the most significant suppressant in earning an associate degree. Identifying with an underrepresented race or ethnicity decreased the odds of earning an award. Like the bachelor’s degree model, retention rates were the biggest predictor for earning an associate degree, increasing between 2.30 and 6.05 times. Model specifics are available in Table A5, and odds ratios are available in Table A6.

Table A6. Odds ratios of the associate-seeking students by each step in the hierarchal logistic model

Variable	Step 1	Step 2	Step 3	Step 4	Step 5
Male	0.67	0.77	0.80	0.76	0.73
Asian American	1.06	1.16	1.17	1.04	1.03
Black/African American	0.45	0.58	.062	0.63	0.63
Latinx/Hispanic	0.58	0.76	0.80	0.75	0.73
Native American/ Alaskan Native	0.62	0.73	0.79	0.85	0.81
Pacific Islander	0.41	0.45	0.52	0.59	0.65
Two or more races	0.63	0.68	0.69	0.75	0.77
Pell eligible	0.99	0.91	0.87	0.87	0.90
Adult learner	0.53	0.62	0.60	0.55	0.51
Full-time	0.48	0.36	0.48	0.46	0.41
Failed class		0.27	0.27	0.27	0.26
Earned a “D”		1.25	1.04	0.93	0.84
Withdrew		0.79	0.77	0.70	0.63
Second Term			6.05	2.40	2.30
Second Year				4.84	3.09
Third Year					3.14

Two-Year Certificates

The two-year certificate model was statistically significant at each step. Few demographic variables contributed to this model. Identifying as either male or Asian American increased the likelihood of earning a certificate. Like the associate degree model, earning a “D” increased the possibility of earning a two-year certificate. Momentum was the best predictor of success, with the odds increasing, but the odds were far smaller than for the associate and bachelor’s degree models, with a range between 1.88 and 3.41. The most prominent suppressor was identifying as a Pacific Islander, starting as an adult learner, and failing at least one class. Model specifics are in Table A7, and the odds ratios can be found in Table A8.

Table A7. Beta weights of logistic hierarchal regression for students seeking two-year certificates

Variable	Step 1	Step 2	Step 3	Step 4	Step 5
Male	0.15*	0.26***	0.31***	0.29***	0.27***
Asian American	0.68***	0.74***	0.75***	0.69***	0.69***
Black/African American	-0.36	-0.18	-0.12	-0.07	-0.05
Latinx/Hispanic	-0.30**	-0.13	-0.08	-0.12	-0.12
Native American/ Alaskan Native	-0.13	-0.04	0.04	0.10	0.08
Pacific Islander	-1.44**	-1.35**	-1.22**	-1.12*	-1.07*
Two or more races	-0.11	-0.02	0.02	0.09	0.10
Pell eligible	-0.01	-0.05	-0.07	-0.06	-0.05
Adult learner	-0.79***	-0.71***	-0.71***	-0.74***	-0.77***
Full-time		0.50***	0.28***	0.26**	0.31***
Failed class		-0.85***	-0.80***	-0.74***	-0.73***
Earned a “D”		0.26***	0.14	0.07	0.02
Withdrew		-0.29***	-0.30***	-0.36***	-0.40***
Second Term			1.23***	0.49***	0.45***
Second Year				1.16***	0.88***
Third Year					0.63***
χ^2	76.83***	187.16***	164.85***	169.34***	57.94***
Nagelkerke R²	0.02	0.05	0.09	0.12	0.13
ΔR^2		0.03	0.04	0.03	0.01

*p < .05, **p < .01, ***<.001

Table A8. Odds ratios of students seeking two-year certificates by each step in the hierarchal logistic model

Variable	Step 1	Step 2	Step 3	Step 4	Step 5
Male	1.17	1.30	1.36	1.33	1.32
Asian American	1.96	2.09	2.11	1.99	1.99
Black/African American	0.70	0.84	0.89	0.93	0.95
Latinx/Hispanic	0.74	0.88	0.92	0.89	0.89
Native American/ Alaskan Native	0.88	0.96	1.04	1.11	1.09
Pacific Islander	0.24	0.26	0.29	0.33	0.34
Two or more races	0.90	0.99	1.02	1.09	1.11
Pell eligible	0.99	0.95	0.93	0.94	0.95
Adult learner	0.46	0.49	0.49	0.48	0.46
Full-time		0.61	0.76	0.77	0.73
Failed class		0.43	0.45	0.70	0.48
Earned a “D”		1.30	1.45	1.07	1.02
Withdrew		0.75	0.74	0.70	0.67
Second Term			3.41	1.63	1.57
Second Year				3.18	2.40
Third Year					1.88

One-Year Certificates

Only the final step of the one-year certificate model was significant, with just one variable predicting certificate achievement: the second-year retention rate. This is striking because it only applies to those who did not earn a certificate within the expected time frame. This may relate to those who did not initially intend to earn a one-year certificate but did at a later time. In other words, this finding may reflect a change in academic goals. Still, the odds of earning the one-year certificate were 5.85 times greater.

Table A9. Beta weights of logistic hierarchal regression for students seeking one-year certificates

Variable	Step 1	Step 2	Step 3	Step 4
Male	-0.51	-0.61	-0.39	-0.40
Asian American	-18.79	-18.34	-18.15	-17.88
Black/African American	1.15	1.45	1.01	1.36
Latinx/Hispanic	-0.55	-0.43	-0.43	-0.78
Native American/ Alaskan Native	-18.94	-19.37	-19.29	-19.45
Pacific Islander	-18.05	-18.60	-17.74	-17.39
Two or more races	-18.29	-18.61	-18.23	-17.75
Pell eligible	0.60	0.63	0.61	0.68
Adult learner	1.04	0.82	1.05	1.15
Full-time		-0.67	0.53	-0.33
Failed class		-0.75	-0.76	-0.85
Earned a “D”		0.41	0.17	-0.06
Withdrew		-1.65	-1.56	-1.91
Second Term			1.12	0.37
Second Year				1.77*
χ^2	13.47	5.83	2.87	5.37*
Nagelkerke R²	0.14	0.20	0.23	0.28
ΔR^2		0.06	0.03	0.05

*p < .05

Table A10. Odds ratios of students seeking one-year certificates by each step in the hierarchal logistic model

Variable	Step 1	Step 2	Step 3	Step 4
Male	0.60	0.54	0.69	0.67
Asian American	0.00	0.00	0.00	0.00
Black/African American	3.17	4.27	2.75	3.91
Latinx/Hispanic	0.58	0.65	0.65	0.46
Native American/ Alaskan Native	0.00	0.00	0.00	0.00
Pacific Islander	0.00	0.00	0.00	0.00
Two or more races	0.00	0.00	0.00	0.00
Pell eligible	1.82	1.88	1.83	1.96
Adult learner	2.82	2.26	2.86	3.14
Full-time		0.51	0.59	0.72
Failed class		0.48	0.47	0.43
Earned a “D”		1.51	1.19	0.94
Withdrew		0.19	0.21	0.14
Second Term			3.07	1.45
Second Year				5.85

A separate model that examined the technical colleges separate from degree-granting institutions, which also award one-year and two-year certificates. A logistic regression model for students at technical colleges seeking a one-year certificate was significant, $\chi^2 = 86.08$ $p < .001$. Those who identified as male were significantly less likely to earn a one-year certificate ($b = -.87$, $p < .001$, $OR = .42$), while being an adult learner increased the odds ($b = .63$, $p < .001$, $OR = 1.88$). Surprisingly, the percent of program completion, as a measure of momentum ($b = .001$, $p = .42$), did not contribute to the model, nor did any race or ethnic variables.