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## Exploratory Advising Impact Report: Spring 2016 to Spring 2019

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### Recommended Citation

Hagman, Amanda M.; Beorchia, Mykel; Hamblin, Stephanie; and Colver, Mitchell, "Exploratory Advising Impact Report: Spring 2016 to Spring 2019" (2019). *Publications*. Paper 11.

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# Exploratory Advising:

IMPACT ANALYSIS

SPRING 2016 TO SPRING 2019

*Powered by Academic and Instructional Services*

# Exploratory students experience a significant increase in persistence from meeting with an advisor

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Exploratory students who met with an academic advisor were more likely to persist than similar exploratory peers who did not (DID = 0.099,  $p < 0.01$ ).

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## **ABSTRACT:**

Academic advising performs a pivotal contribution to student success by providing information about university expectations and avenues towards graduation. Exploratory student advising has the additional task of supporting students in major selection. This analysis investigated the relationship between academic advising and student persistence for exploratory students to better understand the impact of current advising practices. **METHODS:** Exploratory academic advisors met with an average 53% of exploratory students each semester. Students with a record of meeting with an academic advisor were compared to similar exploratory students who did not. Students were compared using prediction-based propensity

score matching. Students who met with an advisor were matched with students who did not based on their persistence predication and their propensity to participate. The groups were compared using difference-in-difference testing (DID). **FINDINGS:** Students were 99% similar following matching. Students who met with an academic advisor were significantly more likely to persist at USU than similar students who did not (DID = 0.099,  $p < .001$ ). The unstandardized effect size can be estimated through student impact. It is estimated that academic advising assisted in retaining 91 (CI: 74 to 107) exploratory students each year who were otherwise not expected to persist.

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# Does academic advising influence student persistence to the next term?

## WHY PERSISTENCE?

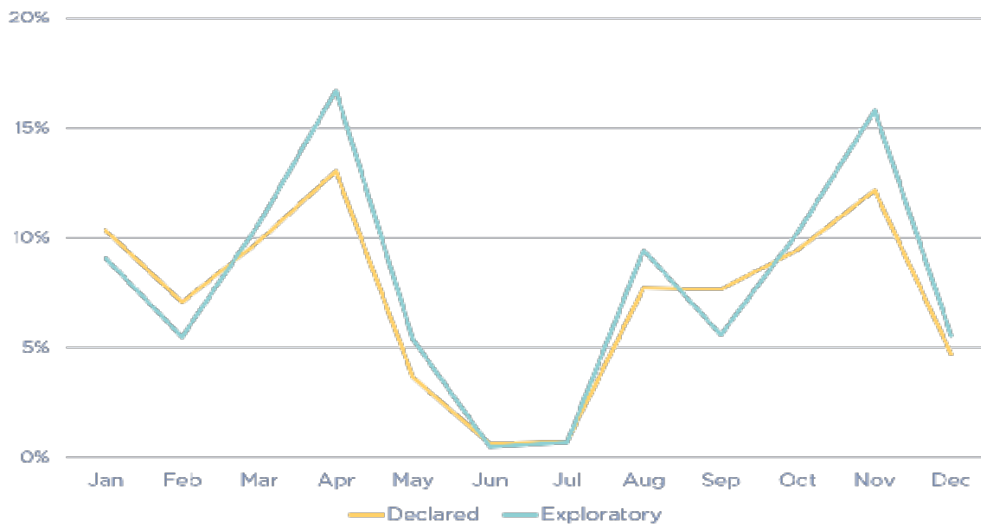
Student success can be defined in various ways. One valuable way to view student success is through progress towards graduation. Progress towards graduation represents students acquiring the necessary knowledge and accumulating credits that prepare them for graduation. Progress towards graduation can be measured through student persistence. Here, persistence is defined as term-to-term enrolment at Utah State University. As a measurement, persistence facilitates a quick feedback loop to identify what's working well and what can be better (Colver, 2019; Bear, Hagman, & Kil, 2020).

## WHY ANALYTICS?

Higher education professionals labor to support student success in all its various forms. To accomplish this, professionals must leverage their education and experience to meet students' needs. However, professionals now have access to far more data than they can feasibly interpret and utilize to support student success. Fortunately, USU has access to professionals and tools that can process and organize data into insights that have historically been hidden from view (Appendix A). University professionals can leverage insights to directly influence student success (Baer, Kil, & Hagman, 2019). Indeed, analytics aligns with USU's mission to be a "premier student-centered land-grant institution" by allowing professionals to know what is going well and what could be better (see Appendix G for the evaluation cycle).

## PERSISTENCE & EXPLORATORY ADVISING

Many students enter their academic careers without declaring a major or having a distinctive career path. In fact, nearly 30% of freshmen during fall 2018 were registered as exploratory at USU. Advisors play an essential role in helping students transition to a declared major. This includes helping students examine their interests and aptitudes while helping them narrow down and eventually select a major and career path. The process of working with an exploratory advisor is thought to improve student sense of belonging, academic success, and retention at USU. This report explores the impact of exploratory advising on persistence to the next term.



**FIGURE 1**  
Advising appointments by month for declared and exploratory students.

**SUMMARY STATISTICS**

Analysis Terms:..... Sp16,Su16,Fa16,Sp17,Su17,Fa17,Sp18, Su18 ,Fa18, Sp18  
 Total Visits..... 9,714 Visits  
 Number of Student in Exploratory Majors ..... 12,529 Students  
 Unique Students..... 4,114 Students  
 Percent of Exploratory Students Participating: ..... 42.4%

# Descriptive Data Insights

## AVERAGE USE

Since Spring 2016, academic advisors have met with 6,293 exploratory students and recorded 7,714 total appointments.

For those who did meet with their academic advisor, the majority (69.4%) met only once with their academic advisor during a semester. The range of use was between 1 to 16 visits during a semester; only a small proportion met with an advisor on 5 or more occasions during a semester (1.2%).

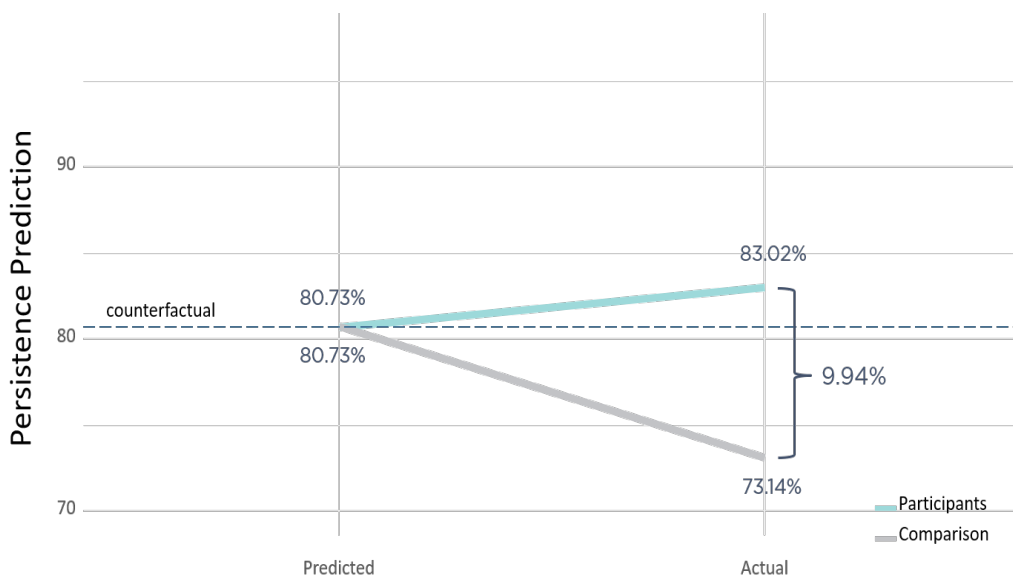
The number of visits varied by month. Figure 1 illustrates when most advisor visits occurred between declared and exploratory students. For the most part the trend between the two student types are similar. On average, across all years, 57.0% of declared students received advising and 56.3% of exploratory received advising. The two peaks in exploratory advising in April and November align with registration week.

Table 1 displays semesterly advising visits for all students. As a general trend, there were more visits and unique students during fall semesters than spring semesters. The proportion of USU students receiving advising appears to be increasing over time, from a low of 35.4% in Spring 2016 to a high of 50.9% in Fall 2018.

**TABLE 1: ADVISING TOTAL USE, TOTAL ADVISING VISITS, AND UNIQUE STUDENT VISITS USE BY TERM**

	Total USU Exploratory	Total Visits	Unique Students	% USU Exploratory Served
201620	1,506	1,110	723	48.0%
201640	1,834	1,622	1,049	57.2%
201720	1,502	1,149	753	50.1%
201740	1,795	1,487	984	54.8%
201820	1,442	1,113	714	49.5%
201840	1,809	1,635	1,061	58.7%
201920	1,740	1,598	1,009	58.0%

**Advisor insight:** The peak in April & November advising appointments for exploratory students reflects students preparing to register for the following semester.



**FIGURE 2**  
Participant and comparison students begin with similar persistence predictions. Actual persistence is significantly different between groups.

# Academic Advising Impact Results

## STUDENT IMPACT

Students with a record of meeting with an academic advisor experienced a significant 9.94% (CI: 8.11% to 11.77%) increase in persistence to the next term. This estimated increase reflected retaining 91 (CI: 74 to 107) students who were otherwise not expected to persist per year. Using an adjusted net tuition multiple from 2017/2018, the estimated retention reflected \$432,574.87 (CI: \$351,764.18 to \$508,631.99) in retained tuition through meeting with an advisor for exploratory students (see Appendix C for tuition multiplier details).

Student impact is measured using difference-in-difference (DID) testing. Details of this analytic technique can be found in Appendix B.

### SUMMARY STATISTICS

Overall Change in Persistence:	9.94% (CI: 8.11% to 11.77%)
Overall Change in Students (per year):	91 (CI: 74 to 107) Students
Analysis Terms:	Sp16,Su16,Fa16,Sp17,Su17,Fa17,Sp18, Su18 ,Fa18, Sp18
Students Available for Analysis:	6,392 Students
Percent of Student Body Participating:	51.02%
Students Matched for Analysis:	3,662 Students
Percent of Students Matched for Analysis	57.29%

An integral step in the analysis is participant matching. Matching for this analysis resulted in the inclusion of 57.29% of the available students who met with an academic advisor. Matching details can be found in Appendix E.

## Participants

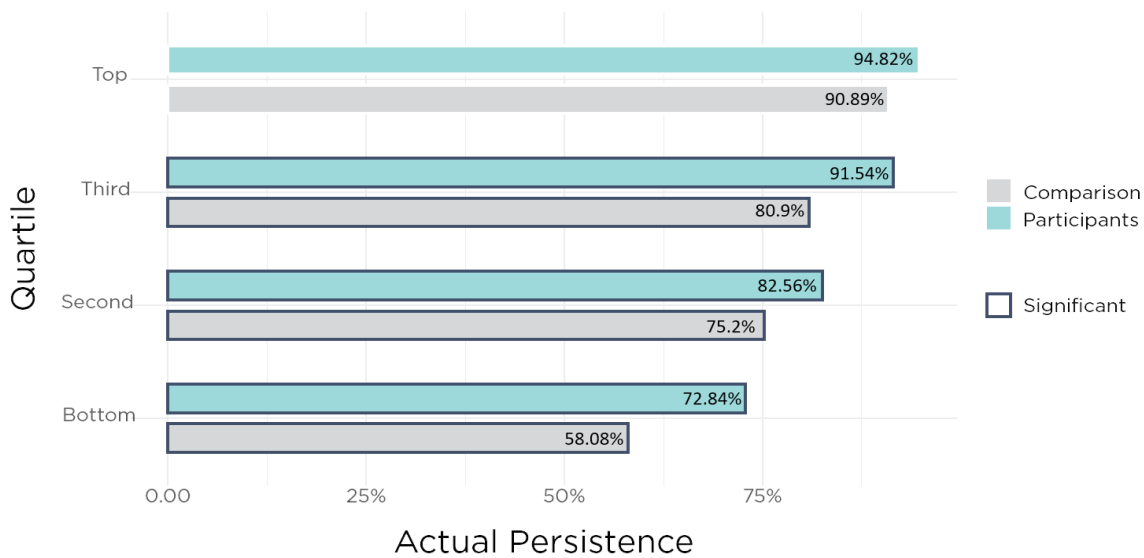
### PARTICIPANT DEMOGRAPHICS

Matching procedures for this analysis resulted in the inclusion of 57.3% of available participants. Students were 47.5% male, 88.8% Caucasian, and 7.7% Hispanic/Lantino. Included students were 63.2% first-time college students and 100% undergraduate.

### PARTICIPANTS

Non-degree seeking students were excluded from the analysis. Participating students were exploratory students advised by Logan Main Campus academic advisors. Semester-level of participation varied between 1 and 15 visits. Median participation was 1 uses. Comparison students were also exploratory students who did not meet with an advisor.





**FIGURE 3**  
Difference in actual persistence between participating and comparison students.

## Persistence Prediction Quartiles

### IMPACTED BY PERSISTENCE PREDICTION

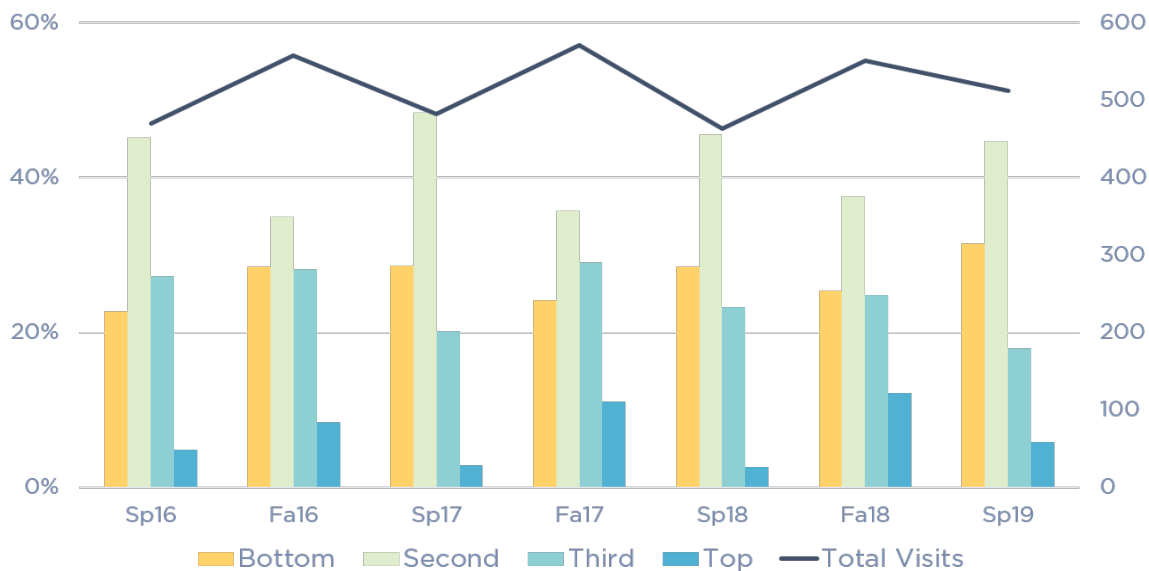
The predictive analytic model adopted by USU divides students into predicted quartiles. Students in the top persistence quartile are considered the most likely to persist at USU. Students in the bottom persistence quartile are considered the least likely to persist at USU. Figure 3 displays the actual persistence of students by quartile. Meeting with an academic advisor was associated with significant changes in persistence for students in the:

- Third Quartile (50th - 74th Percentiles)
- Second Quartile (25th - 49th Percentiles)
- Bottom Quartile (1st - 24th Percentiles)

Gains in persistence were associated with retaining:

- Third Quartile - 36 Students/yr
- Second Quartile - 28 Students/yr
- Bottom Quartile - 23 Students/yr

The number of students receiving academic advising by quartile remained constant relatively across time (Figure 4). Most students who visited with an academic advisor were from the second persistence quartile (light green bar).



**FIGURE 4**  
Proportion of students meeting with an advisor by persistence quartile.

# Student Subgroup Findings

## IMPACTED STUDENT GROUPS

Illume Impact provides an analysis that looks at various student groups to identify how the program influenced different populations of students. Please note that the student groups are not mutually exclusive. Table 1 shows all student groups who experienced a significant change from meeting with an advisors. Appendix A lists all subgroups with non-significant findings.

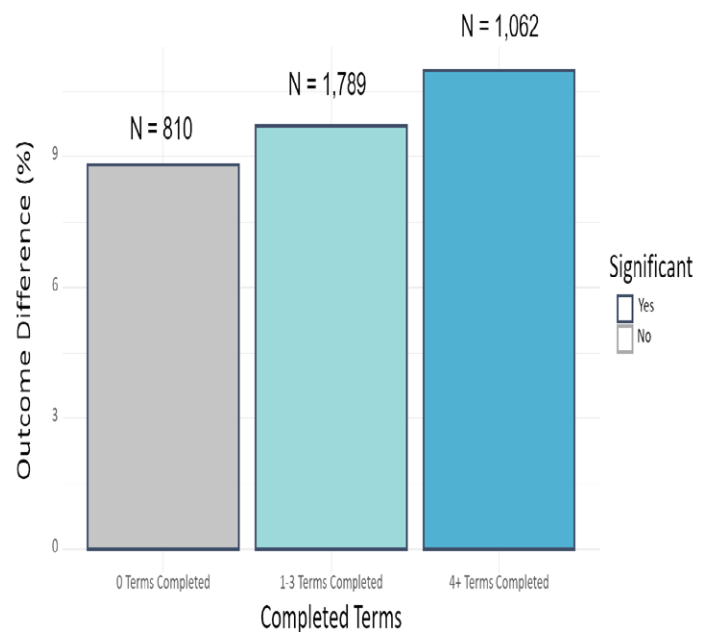
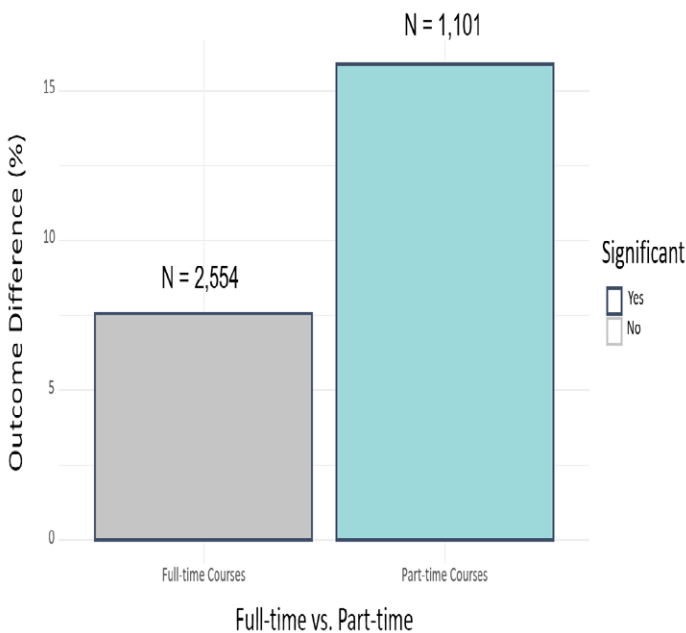
In general, exploratory students who met with an advisor experienced an increase in persistence. Within the subgroup analyses, there were several subgroups that experienced significant changes.

**Race & Ethnicity:** USU has a high population of White or Caucasian and non-Hispanic or Latino students. For this reason, Impact analyses can often detect change in persistence for these groups; however, students of other races or ethnicities rarely reach the critical mass necessary to detect a significant change. With this in mind, the analysis found a significant increase in persistence for Caucasian and non-Hispanic/Latino students.

**Student Time Status (Figure 5):** Full-time and part-time exploratory students who met with an academic advisor experienced significant gains from meeting with an advisor. The gain for meeting with an advisor was greater for part-time students.

**Terms Complete (Figure 6).** The analysis considered three term breakpoints: new students (0 terms completed), early career students (1 to 3 terms completed), and later career students (4 or more terms). Students at each point in their academic career experienced significant gains from meeting with an academic advisor. The gain is largest for students later in their academic career. This is opposite the trend seen from academic advising in general, with larger impacts for early career students.

**Course Modality.** There were three types of course modality considered in the analysis; all on-ground, mixed modality, and all online. Meeting with an academic advisor had a significant influence for all exploratory students with any course modality.



**FIGURE 5**

Change in persistence by student time status.

**FIGURE 6**

Change in persistence by number of terms completed.

## IMPACTED STUDENT GROUPS [CONTINUED]

**Student Gender.** Both exploratory students who identify as male and female experienced significant gains from meeting with an advisor. The increase for both groups were similar, 1.15% for males and 1.14% for females.

**Student Type .** Impact considers three student types: first-time in college, readmitted, and transfer students. Exporatory students from each student type experienced a significant lift in persistence from meeting with an advisor.

# Student Subgroup Table

**TABLE 2:**

*Student Subgroups Experiencing a Significant Change From Participating*

N	Student Group**	Model Fit***	Actual Persistence		Difference-of-Difference	CI	p-value	Lift in People
			Participant	Comparison				
3,662	Overall	Poor	83.02%	73.14%	9.94%	1.83%	0.0001	91
3,662	Undergraduate Students	Poor	83.02%	73.14%	9.94%	1.83%	0.0001	91
3,642	Non-STEM Major	Poor	82.95%	73.11%	9.91%	1.83%	0.0001	90
3,382	Not Hispanic or Latino	Poor	83.53%	73.31%	10.21%	1.88%	0.0001	86
3,251	White or Caucasian	Poor	82.77%	73.13%	9.66%	1.94%	0.0001	79
2,554	Full-time Courses	Poor	85.88%	78.20%	7.56%	2.03%	0.0001	48
2,348	All On-Ground Status	Poor	84.30%	74.80%	9.58%	2.22%	0.0001	56
2,314	First Time in College	Poor	84.71%	76.12%	8.20%	2.14%	0.0001	48
1,923	Female Students	Poor	83.36%	73.94%	9.11%	2.51%	0.0001	44
1,789	1-3 Terms Completed	Poor	81.39%	71.72%	9.71%	2.63%	0.0001	44
1,739	Male Students	Poor	82.64%	72.28%	10.84%	2.66%	0.0001	47
1,509	Second Persistence Prediction Quartile (25th - 49th Percentiles)	Poor	82.56%	75.20%	7.48%	2.86%	0.0001	28
1,101	Part-time Courses	Poor	76.54%	60.42%	15.87%	3.86%	0.0001	44
1,062	4+ Terms Completed	Poor	82.65%	71.79%	10.97%	3.56%	0.0001	29
750	Readmitted Students	Poor	80.17%	64.92%	14.74%	4.64%	0.0001	28

\*Subgroups with fewer than 250 students are considered too small for reliable analysis

\*\*Definitions of student segments can be found in Appendix F

\*\*\*Model fit is measured considering the fidelity of the comparison group to the predicted persistence. Good fit is ascertained when comparison students' actual persistence was similar to their predicted persistence (< 1% difference). Adequate fit has a difference between 1% and 2.9% between actual and

# Student Subgroup Table [continued]

**TABLE 2:**

*Student Subgroups Experiencing a Significant Change From Participating*

N	Student Group	Model Fit**	Actual Persistence		Difference-of-Difference	CI	p-value	Lift in People
			Participant	Comparison				
590	Transfer Students	Poor	80.17%	68.02%	12.12%	5.15%	0.0001	18
267	All Online Status	Poor	74.52%	63.62%	10.84%	7.62%	0.0054	7
116	Two or More Racial Heritages	Poor	87.22%	71.43%	14.75%	10.07%	0.0043	4
28	Pacific Islander	Poor	89.66%	63.68%	21.18%	20.28%	0.041	2

\*Subgroups with fewer than 250 students are considered too small for reliable analysis

\*\*Model fit is measured considering the fidelity of the comparison group to the predicted persistence. Good fit is ascertained when comparison students' actual persistence was similar to their predicted persistence (< 1% difference). Adequate fit has a difference between 1% and 2.9% between actual and predicted persistence. Poor fit has greater than 3% difference between actual and predicted persistence.

## Additional Analyses

### APPOINTMENT TYPE

Academic advising can be offered face-to-face, over the phone, or through email. The amount of email and phone call advising has been increasing in recent years, and the proportion of students receiving only-email and only-phone advising is also

increasing. This is especially true for exploratory students (Figure 7). Since Spring 2016, there has been a 386% increase in phone and email advising. Nearly 40% of exploratory students had only-email or only-phone advising in Spring 2019.



**FIGURE 7**

Change in proportion of students advised only by email or phone for declared and exploratory students.

# Phone & Email Advising Practices

**TABLE 3:** Number and proportion of declared and exploratory students advised

	Declared				Exploratory			
	All Students	All Advised	Percent Advised	Percent Email or Phone Only	All	All Advised	Percent Advised	Percent Email or Phone Only
201620	20,390	7,026	32.10%	1.40%	1,506	723	48.00%	8.20%
201630	6,560	383	5.60%	3.70%	309	31	10.00%	7.80%
201640	21,973	8,970	37.70%	1.60%	1,834	1,049	57.20%	10.50%
201720	20,352	8,032	36.80%	2.40%	1,502	753	50.10%	13.80%
201730	6,239	374	5.70%	4.80%	270	33	12.20%	12.20%
201740	21,810	9,934	42.10%	2.50%	1,795	984	54.80%	17.20%
201820	20,390	8,648	39.60%	3.10%	1,442	714	49.50%	20.90%
201830	6,620	398	5.70%	5.70%	321	44	13.70%	13.70%
201840	21,783	10,942	46.40%	4.50%	1,809	1,061	58.70%	35.70%
201920	20,024	9,564	43.90%	6.50%	1,740	1,009	58.00%	39.70%

## Impact of Email & Phone Advising

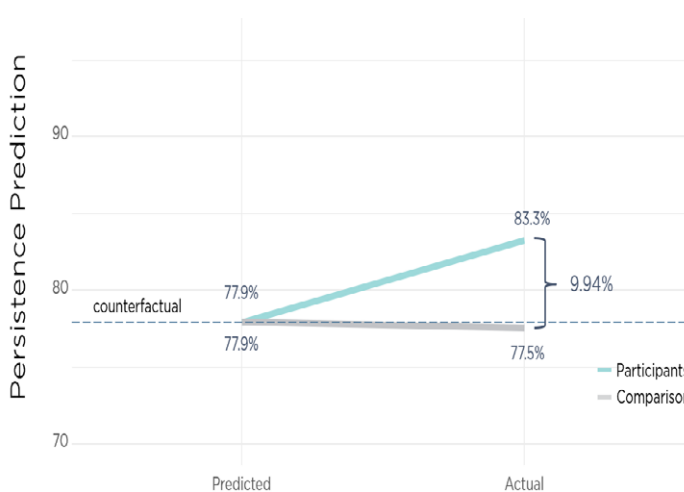
### INVESTIGATING THE EFFECT OF LEVEL OF PARTICIPATION ON PERSISTENCE

In general, students who have only phone or email advising experience a significant gain in persistence, 5.7% (CI: 3.3% to 8.1%). Considering student segments, gains were seen for:

- Students who identify as male & female
- Early & later career students
- Part-time students
- Bottom persistence quartile students
- All online students
- First-time in college & transfer students

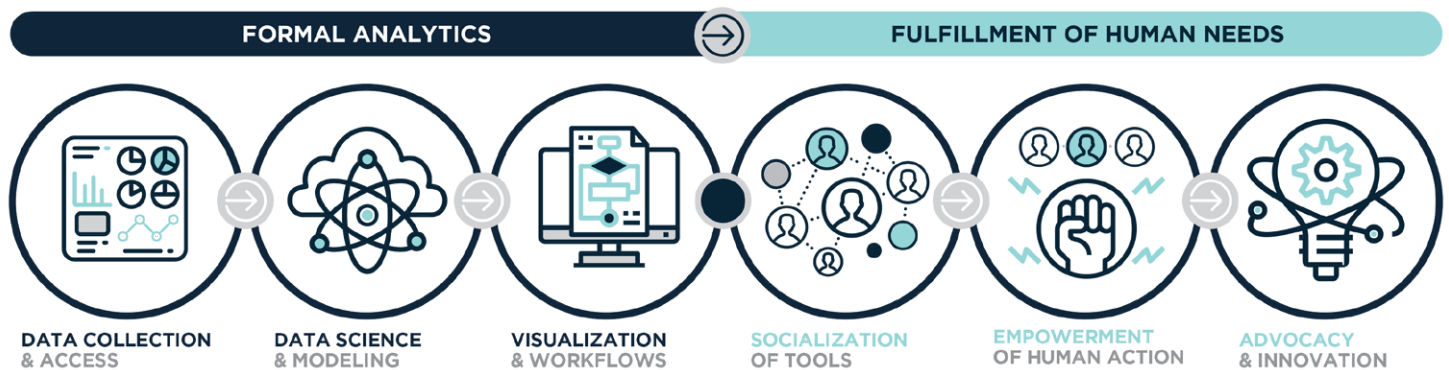
Interestingly, a large portion of the students who receive only-email or only-phone advising are bottom persistence quartile students, 40.4%. Added efforts to advising bottom persistence quartile student through email and phone appear to be having a significant impact on persistence.

Previous evaluation revealed that many bottom persistence quartile students did not meet with an advisor. This outreach and advising method increases access to advising for individuals in lower persistence quartiles. The fact that email and phone advising provides significant benefit to the student through increased persistence (and likely, other unmeasured ways), supports the use of this practice.



**FIGURE 8** Difference in Difference. Participant and comparison students begin with similar persistence predictions. Actual persistence is significantly different between groups.

# The Lifecycle of sustainable analytics



**FIGURE 13**  
The Lifecycle of Sustainable Analytics.

## Insights & Next Steps

A major goal of analytics is to identify areas for improvement and innovation. To be successful, all initiatives must consider the role of formal analytics and role of the humans needs. The Lifecycle for Sustainable Analytics presents the major domains within any successful analytics initiatives. It requires sound data science practices on the left-hand and proactive human relations on the right. Together the 6-domains support the development and utilization of analytics insights for improvement and innovation.

### Exploratory Advising Insights

Academic advising has been at the forefront of Utah State University's efforts to make data-informed decisions for the betterment of students. An impactful data-informed decision made by Exploratory Advising can be seen in the increase of remote meetings (i.e. phone and email advising) among exploratory students. This push came when University Advising leadership joined 3 powerful insights.

1. Many Exploratory students had lower persistence predictions and graduated at lower rates than their peers.
2. Academic Advising had a powerful impact on helping students with lower persistence predictions progress towards graduation.
3. Students with lower persistence predictions were the least likely to meet with an academic advisor

In response to these data-insights, University Advising leadership decided to proactively offer advising to these students, even if they couldn't see them face-to-face. Figures 7, reflects the outcomes of this data-informed decision to make advising accessible to Exploratory Students through over the phone and email correspondence. This evaluation indicated that their efforts to reach students face-to-face or over email and the phone are helping students persist.

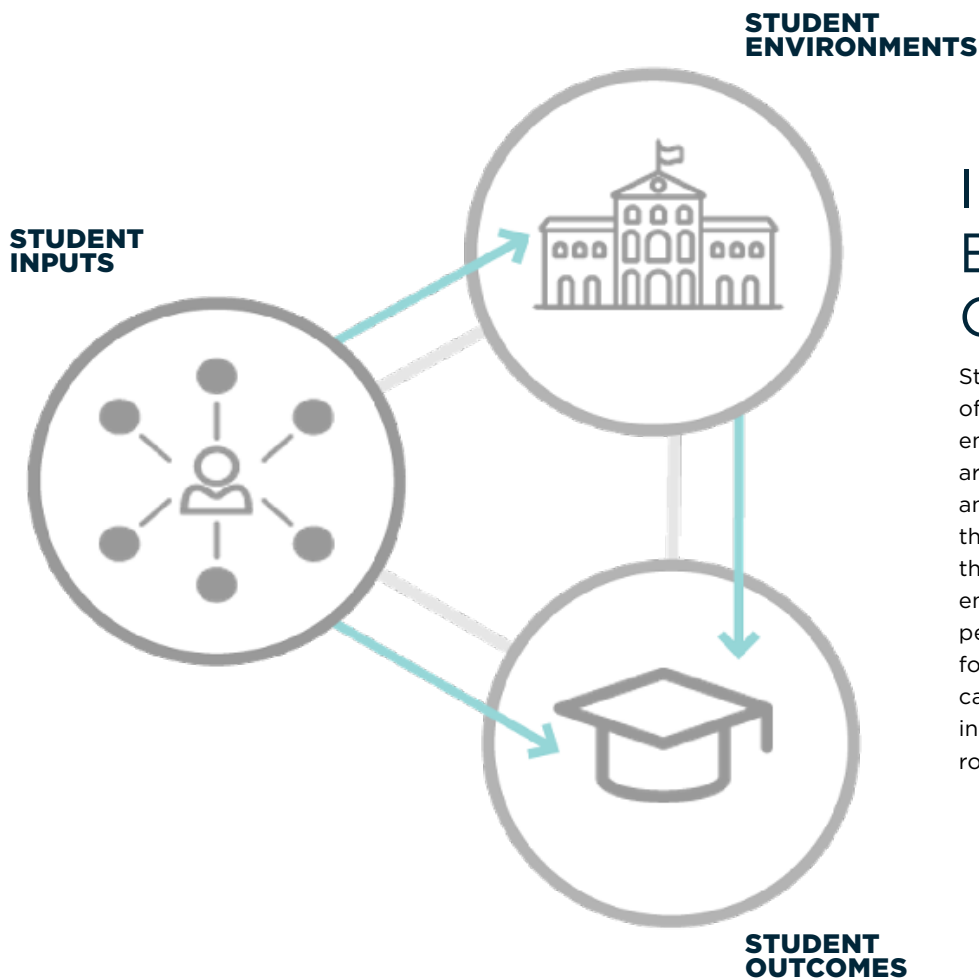
This knowledge has been particularly valuable given the COVID-19 lockdown restrictions. Advisors, along with other university professionals, transitioned to virtual advising. The experience that Exploratory Advising had already gained through proactive outreach prepared them to fluidly make this transition. More importantly, advisors already had evidence that distance advising could be successful.

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# Appendix A

## THEORETICAL FOUNDATION FOR IMPACT ANALYSES: INPUT, ENVIRONMENT, OUTPUT MODEL (ASTIN , 1993)



### Input - Environment - Outcomes

Student success is composed of both personal inputs and environments to which individuals are exposed (Astin, 1969). Impact analysis controls for student input though participant matching on (1) their likelihood to be involved in an environment and (2) their predicted persistence score. By controlling for student inputs, impact analyses can more accurately measure the influence of specific student environments on student persistence.

#### STUDENT INPUTS

Students bring different combinations of strengths to their university experience. Their inputs influence student life and success, but do not determine it.

#### STUDENT ENVIRONMENTS

The University provides a diverse array of curricular, co-curricular, and extra-curricular activities to enhance the student experience. Students selectively participate to varying degrees in activities. Student environments influence student life and success, but do not determine it.

#### STUDENT OUTCOMES

While student success can be defined in multiple ways, a good indicator of student success is persistence to the next term. It means that students are continuing on a path towards graduation. Persistence is influenced by student inputs and University environments.

#### IMPACT ANALYSIS

An impact analysis can effectively measure the influence of University initiatives on student persistence by accounting for student inputs through matching participants with similar students who chose not to participate.



# Appendix B

## **ANALYTIC DETAILS: ESTIMATING PROGRAMMATIC IMPACT THROUGH PREDICTION-BASED PROPENSITY SCORE MATCHING (PPSM)**

Impact analyses are quasi-experiments that compare students who participate in University initiatives to similar students who do not. Students who participate are called participants, students who do not have a record of participation are called comparison students. The analysis results in an estimation of the effect of the treatment on the treated (ETT). In other words, it estimates the effect of participating in University initiatives on student persistence for students who participated. This estimation is appropriate for observational studies with voluntary participation (Geneletti & Dawid, 2009).

**Accounting for bias.** While ETT is appropriate for observational studies with voluntary participation, voluntary participation adds bias. Specifically, voluntary participation results in self-selection bias, which refers to the fact that participants and comparison students may be innately different. For example, students who self-select into math tutoring (or intramurals or the Harry Potter Club) may be quantitatively and qualitatively different than students who do not use math tutoring (or intramurals or the Harry Potter Club). To account for these differences, reduce the effect of self-selection bias, and increase validity, a matching technique called Prediction-Based Propensity Score Matching (PPSM) is used.

In PPSM, matching is achieved by pairing participating students with non-participating students who are similar in both their (a) predicted persistence and (b) their propensity to participate in an iterative, boot-strapped analysis (Milliron, Kil, Malcolm, & Gee, 2017).

**(A) Predicted Persistence.** Utah State University utilizes student data to create a persistence prediction for each student. The main benefit to students from the predictive system is an as early alert system; it identifies students in need of additional resources to support their success at USU. A secondary use of the predicted persistence scores are to evaluate the impact on student-facing programs on student success. This is an invaluable practice that fosters accountability, efficiency, and innovation for the benefit of students.

The predicted persistence scores are derived through a regularized ridge regression. This technique allows for the incorporation of numerous student data points, including:

- academic performance
- degree progress metrics
- socioeconomic status
- student engagement

The ridge regression rank orders the numerous covariates by their predictive power. This equation is then used to predict student persistence scores for students at USU. This score is utilized as one point for matching in PPSM.

**(B) Propensity to Participate.** The second point used for matching in PPSM is a propensity score. Propensity scores reflect a student's likelihood to participate in an initiative (Rosenbaum & Rubin, 1983). It is derived through logistic ridge regression that utilizes participation status as the outcome variable. Using the equation, each student is given a propensity score which reflects their likelihood to participate regardless of their actual participation status.

Matching is achieved through bootstrapped iterations that randomly selects a subset of participant and comparison students. Within each bootstrapped iteration, comparison students are paired using 1-to-1, nearest neighbor matching. Matches are created when student predicted persistence and propensity scores match within a 0.05 caliper width. Within the random bootstrapping iterations, all participants are included at least once. Students who do not find an adequate match are excluded from the analysis (for additional details see Louviere, 2020).

**Difference-in-Difference.** To measure the impact of University services on student persistence, a difference-in-difference analysis is used. A difference-in-difference analysis compares the calculated predicted means from the bootstrapped iteration distributions to the actual persistence rates of participating and comparison students. In other words, the analysis looks at the difference between predicted persistence and actual persistence between the two groups of well-matched students. Statistical significance is measured at the 0.05 alpha level and utilizes confidence intervals.

# Appendix C

## ADJUSTED RETAINED TUITION MULTIPLIER

Retained tuition is calculated by multiplying retained students by the USU average adjusted tuition. Average adjusted tuition was calculated in 2018/2019 dollars with support from the Budget and Planning Office. The amounts in the below table reflect net tuition which removes all tuition waivers from the overall gross tuition amounts. Utilizing net tuition provides a more accurate and conservative multiplier for understanding the impact of University initiatives on retained tuition. The table below parses the average adjusted tuition by campus and academic level. The highlighted cell represents the multiplier used in this analysis.

### RETAINED TUITION MULTIPLIER CALCULATION

Student Groups	Net Tuition	Number of Students	Average Annual Tuition & Fees
All USU Students	\$148,864,384	33,070	\$4,501.49
Undergraduates	\$131,932,035	29,033	\$4,544.21
Graduates	\$16,932,349	4,037	\$4,194.29
Logan Campus Students	\$119,051,003	25,106	\$4,741.93
Undergraduates	\$107,711,149	22,659	\$4,753.57
Graduates	\$11,339,854	2,447	\$4,634.19
Statewide Campus Students	\$25,941,419	7,964	\$3,257.34
Undergraduates	\$20,303,215	3,864	\$5,254.46
Graduates	\$5,638,204	1,590	\$3,546.04
USU-E Price & Blanding Students	\$3,871,962	2,560	\$1,512.49

# Appendix D

## STUDENT SUBGROUPS THAT DO NOT EXPERIENCE A SIGNIFICANT CHANGE IN PERSISTENCE

N	Student Group**	Model Fit***	Actual Persistence		Difference of Difference	Confidence Interval	p-value
			Participant	Comparison			
280	Hispanic or Latino	Poor	76.91%	70.82%	6.75%	7.38%	0.0727
264	Top Persistence Prediction Quartile (75th - 100th Percentiles)	Poor	94.82%	90.89%	3.62%	4.60%	0.1234
128*	Unknown Racial Heritage	Poor	85.18%	76.68%	9.14%	9.60%	0.0618
61*	Black or African American	Poor	81.96%	70.12%	11.18%	14.99%	0.1422
42*	Asian or Asian American	Good	85.96%	79.22%	10.21%	16.87%	0.2311
33*	American Indian/Alaskan Native	Poor	76.86%	72.26%	11.00%	20.58%	0.2898
20*	STEM Major	Poor	96.01%	100.00%	4.86%	10.03%	0.3192
6*	Unknown Undergraduate Type	Poor	66.71%	88.13%	-16.78%	65.94%	0.506

\*Subgroups with fewer than 250 students are considered too small for reliable analysis

\*\* Student group definitions available in Appendix F

\*\*\* Model fit is measured considering the fidelity of the comparison group to the predicted persistence. Good fit is ascertained when comparison students' actual persistence was similar to their predicted persistence (< 1% difference). Adequate fit has a difference between 1% and 2.9% between actual and predicted persistence. Poor fit has greater than 3% difference between actual and predicted persistence.

# Appendix E

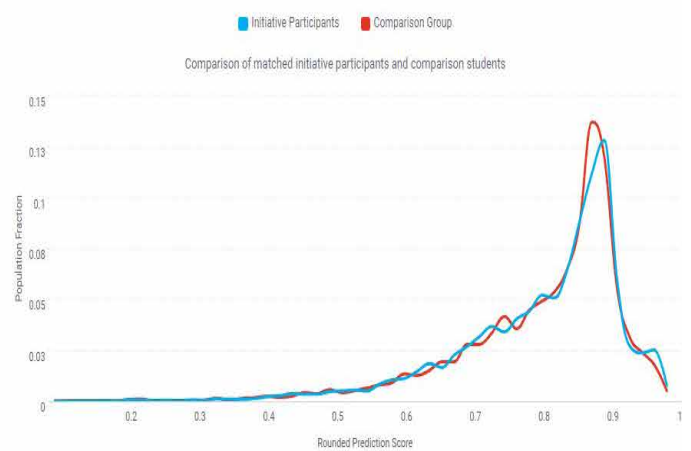
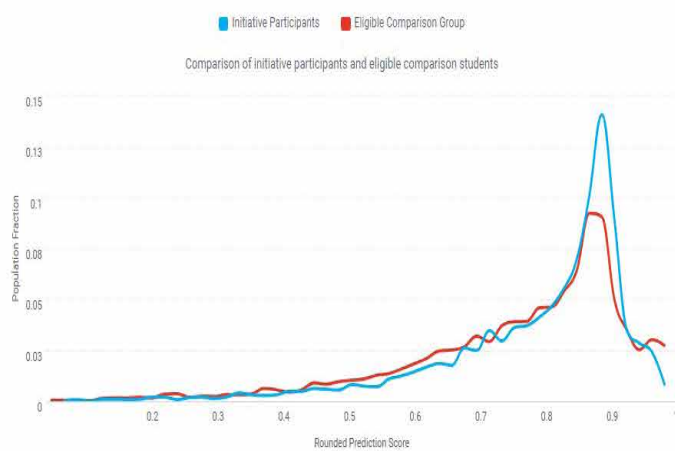
## MATCHING DETAILS

Matching for the analysis resulted in 58% of available participants, or 3,662 students, being successfully matched for the analysis. Participating students who did not have an adequate match in the comparison group during the PPSM process were excluded from the analysis. While higher matching is preferred, a 58% match is adequate with a large sample size, like those seen in this analysis.

**Predicted Persistence Matching:** Prior to matching samples were 88% similar based on students' predicted persistence (Figure A). Following matching the samples were 95% similar.

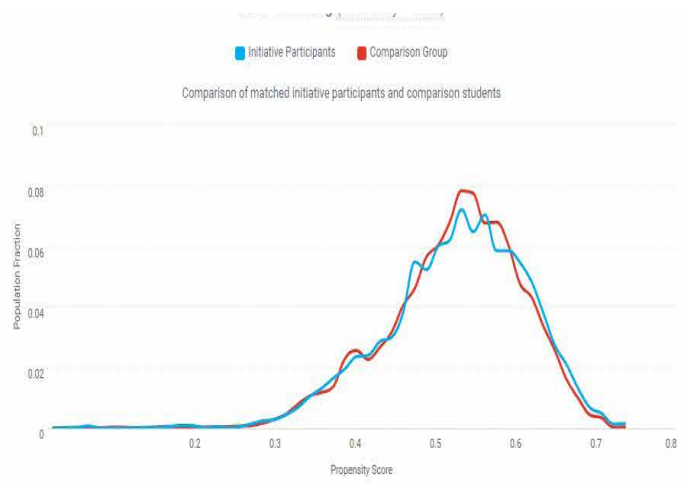
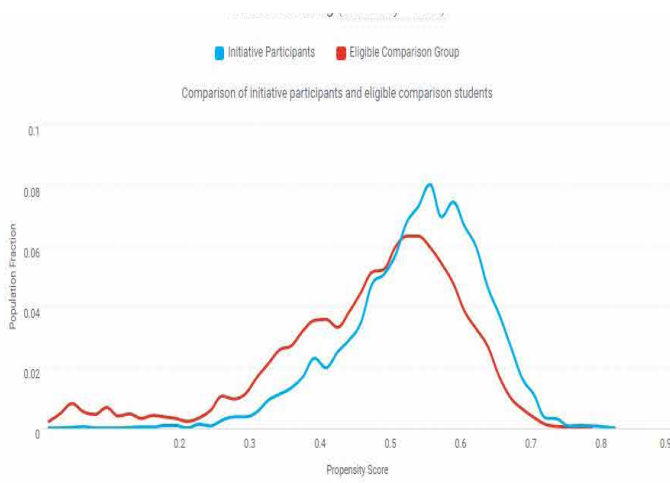
**Propensity Matching:** Participating and comparison students were 79% similar based on propensity score prior to matching (Figure B). Following matching, the similarity in propensity was 95%.

Both the predicted persistence and propensity score distributions for the participating and comparison students were relatively similar. When this occurs, the selection bias between participants and comparison students is considered to be less severe.



### PREDICTED PERSISTENCE: PARTICIPATING & COMPARISON STUDENTS

Participating and comparison students receive scores based on their predicted persistence to the next semester. This score is based on historic data from Utah State University Students



### PROPENSITY TO PARTICIPATE BTW PARTICIPATING & COMPARISON STUDENTS

Participating and comparison students receive scores based on their likelihood to participate in the initiative.

# Appendix F

## STUDENT SEGMENT DEFINITIONS

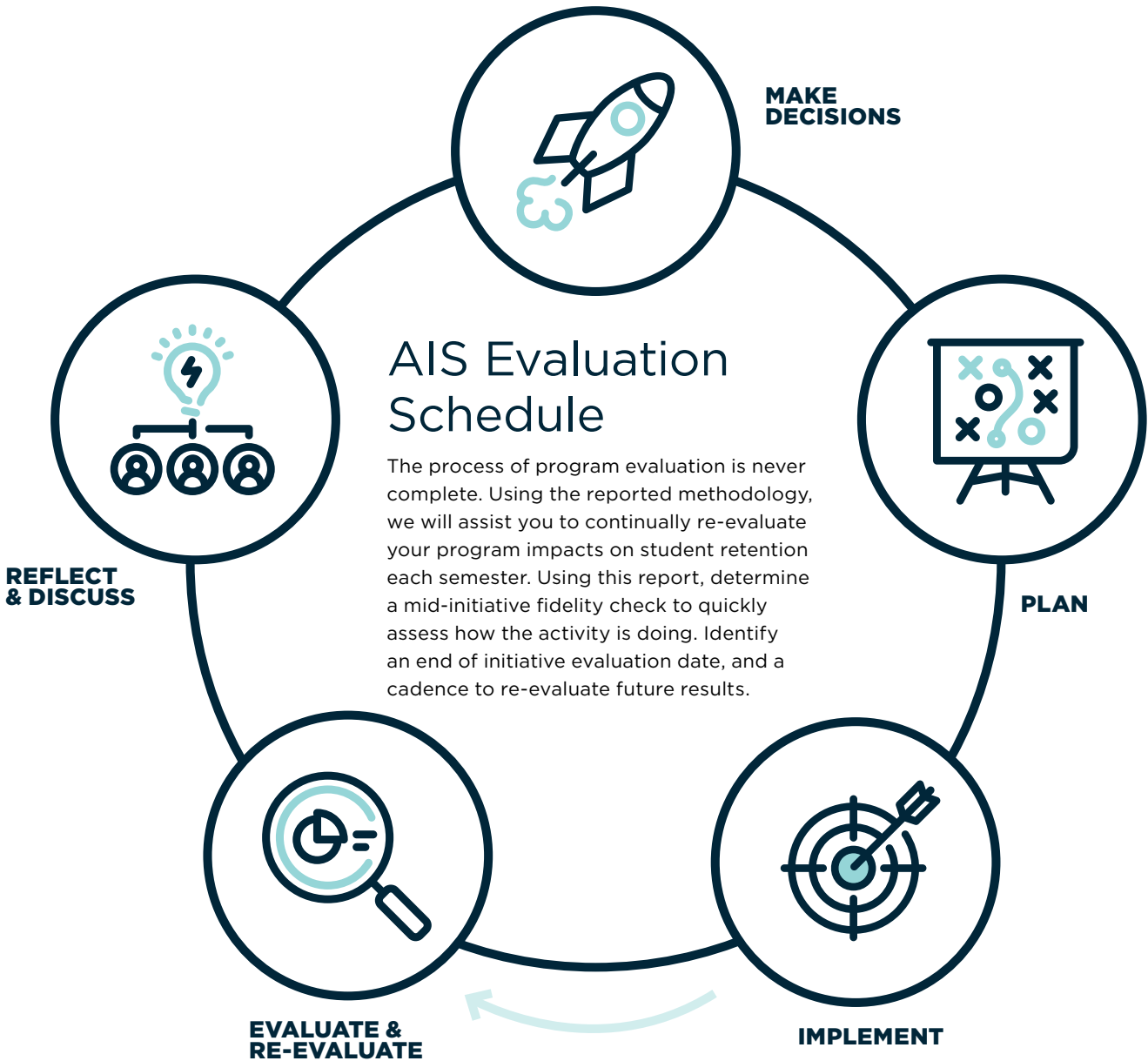
Student Subgroup	Definition
0 Terms Completed	Students with 0 terms in their collegiate career completed; incoming freshmen
1 - 3 Terms Completed	Students who have completed 1 to 3 terms in their collegiate career
4+ Terms Completed	Students with 4 or more terms in their collegiate career completed
All On-Campus	Students attending all courses face-to-face
Online or Broadcast	Students attending all courses online or via broadcast
Mixed or Blended Course Modality	Students attending both face-to-face and online or broadcast courses
Full-time Students	Undergraduate students enrolled in 12 or more credits; Graduate students enrolled in 9 or more credits
Part-time Students	Undergraduate students enrolled in less than 12 credits; Graduate students enrolled in less than 9 credits
First Time in College	Students who enter USU as new freshmen, who have maintained continuous enrollment or records of absences (i.e. LOA)
Transfer Students	Students who attended another university prior to attending USU
Readmitted Students	Students who attended USU, left for a time (without filing a LOA), and returned after re-applying to USU
Unknown Undergraduate Type	Students with an unknown admitted type
High School Dual Enrollment	High school students simultaneously taking high school and college courses
STEM	Students with a primary major in science, technology, engineering, or mathematics
Non-STEM	Students with a primary major that is not in science, technology, engineering, or mathematics
Top Persistence Prediction Quartile	The total USU student population is divided so that 25% of students fall in each quartile. The top quartile contains students with the highest predicted persistence (75th - 100th percentile)
Third Persistence Prediction Quartile	The total USU student population is divided so that 25% of students fall in each quartile. The third quartile contains students with higher predicted persistence (50th - 74th percentiles)
Second Persistence Quartile	The total USU student population is divided so that 25% of students fall in each quartile. The second quartile contains students with lower predicted persistence (25th - 49th percentiles)
Bottom Persistence Quartile	The total USU student population is divided so that 25% of students fall in each quartile. The bottom quartile contains students with the lowest predicted persistence (1st - 24th percentile students)
Female	Students identifying as female
Male	Students identifying as male

**STUDENT SEGMENT DEFINITIONS [CONTINUED]**

<b>Student Subgroup</b>	<b>Definition</b>
Non-Hispanic or Latino	Students who do not identify as Hispanic or Latino
Hispanic or Latino	Students who identify as Hispanic or Latino
Race: Two or More	Students who identify with two or more races
Race: Unknown	Students who did not provide race information
Race: Asian	Students who identify as Asian
Race: Black or African American	Students who identify as African American
Race: Pacific Islander	Students who identify as a Pacific Islander
Race: American Indian/Alaskan Native	Students who identify as American Indian or Alaska Native
Race: White or Caucasian	Students who identify as White or Caucasian

# Appendix G

## UTAH STATE UNIVERSITY'S EVALUATION CYCLE



**EVALUATE & RE-EVALUATE**

Get the data to AIS and we can run an evaluation on persistence. For goals that don't include persistence AIS can assist you in finding resources to measure your improvement.

**REFLECT & DISCUSS**

Consider the report and the evaluators insights to produce discussion within your department.

**MAKE DECISIONS**

Formulate possible actions to improve your program. Select actions that align with your program goals.

**PLAN**

Make concrete plans to apply your decisions. Determine the who, where, and when of your actions.

**IMPLEMENT**

Put your plans into actions. Remember to periodically check the progress of your plans as they are being implemented.