Student Insights Report, Fall 2019

The Center for Student Analytics

Follow this and additional works at: https://digitalcommons.usu.edu/analytics_pubs

Part of the Applied Statistics Commons, and the Higher Education Commons

Recommended Citation
FOR THE PAST THREE YEARS, the staff of the Center for Student Analytics have worked to discover and expose meaningful, data-informed insights into what helps students succeed at Utah State University.

The following pages highlight 20 of the most useful insights we found provided here in small sets that will be useful to students, faculty, staff, university leadership, parents, and even prospective students.

As you explore this report, we encourage you to see the student data as a window into USU itself. While big data helps us understand how individual students are performing, it tells us a great deal more about the health of USU as an institution—an Aggie community working diligently to cultivate opportunities for student learning, discovery, and engagement.
DATA PROTECTION AND VALUE

UTAH STATE UNIVERSITY VALUES PRIVACY and remains trustworthy by working with student data in an intentional and secure way. As part of these efforts, USU has a transparent privacy policy regarding the ethical use of data collected from the USU community, including procedures that prevent unauthorized access or disclosure of private student data.

Additionally, officers of the institution that work closely with student data use a transparent, collaborative approach to safeguard data against being used inappropriately.

The controls and procedures utilized by the Center for Student Analytics to create this report align with federal and state laws regarding protection of privacy and also adhere to the highest standards of student data ethics.

If you have questions about the practices and procedures USU employs to protect student data, contact:

CENTER FOR STUDENT ANALYTICS
435-797-0623
analytics@usu.edu

IN INSIGHTS IN THIS REPORT

STUDENTS PG.5
FACULTY PG.11
LEADERSHIP PG.19
UNIVERSITY STAFF PG.25
FUTURE AGGIES PG.31
INSIGHTS FOR STUDENTS

1. ADVISING MATTERS
2. TAKE THE RIGHT NUMBER OF COURSES
3. PREDICTORS OF SUCCESS
4. AGGIE RECREATION FACILITY (ARC)
MEETING WITH AN ACADEMIC ADVISOR each semester is one of the most important things a student can do to improve their chances of remaining enrolled and working towards graduation—something we call “persistence.”

Of all co-curricular programs and services we have studied over the past three years, participation in advising consistently shows the greatest widespread association with student well-being, second only to students’ experiences with faculty in the classroom.

To discover the important impact academic advising can have, the Center for Student Analytics partnered with University Advising to investigate the relationship between meeting with an advisor and students’ likelihood to persist toward graduation.

Looking at four semesters across 2016 and 2017, we found a meaningful increase in students’ persistence rates when the students met with an advisor each term. As shown in the data points above, students who met with an advisor were 5.59% more likely to persist toward graduation, even after controlling for baseline variability—a way of thinking about the strengths and abilities students develop before they begin their collegiate career. Overall, these results highlight the meaningful impact advising has on student well-being.

THE STUDENT TUITION PLATEAU IS AN IMPORTANT ELEMENT OF THE USU EXPERIENCE: taking any number of credits between 12 and 18 costs the same amount of money.

We pulled data showing students are more likely to persist toward graduation as the number of classes they take each semester increases. In the chart above, you can see students who signed up for six or seven classes were the most likely to persist from semester to semester—at least a few of those classes were only one or two credits a piece, such as yoga or Connections. Even students with lower GPAs who take more courses are more likely to persist toward graduation compared to higher performing students who take fewer courses.

Based on this data, where possible, we encourage students to take advantage of the tuition plateau’s cost savings by adding additional courses. Students are encouraged to work closely with an advisor to select courses that make sense and contribute to an enriched academic experience at USU.
IF YOU WANTED TO PREDICT whether or not a student was going to be successful in college, would you rather know their high school GPA or whether or not they register for their college classes as soon as registration becomes available?

Predictive models help identify which student-related data and variables are highly aligned with success and persistence. Our models show that earlier course registration is a much better indicator of student persistence than variables related to past performance, such as high school GPA. In the chart below, you can see that students with low high school GPAs who register on-time (when registration first opens) are more likely to persist toward graduation than students with higher GPAs who register closer to the start of the semester.

Registering on-time is critical. Students not only get a better selection of classes, but our research shows there are significant advantages to getting a semester plan in place well in advance. Since tuition is not due until school starts each term, on-time registration helps students enjoy the peace of mind that comes from having a plan.

USING USU RECREATION FACILITIES like the ARC has a positive impact on students’ likelihood to graduate. By looking at students who visited USU Recreation Facilities each semester, we found a positive relationship between gym use and students’ academic well-being.

As shown in the graph above, levels of participation across the spectrum were shown to increase students’ likelihood to persist towards graduation. We determined that roughly 71 students each year remain enrolled at USU because of the positive benefits they experience from utilizing the Aggie Recreation Center and similar facilities covered by student fees.
INSIGHTS FOR FACULTY

5. CANVAS COURSE DESIGN
6. WRITING CENTER
7. MATH TUTORING
8. SUPPLEMENTAL INSTRUCTION (SI)
AN IMPORTANT STEP TO DETERMINING whether co-curricular experiences impact student well-being is controlling for the variables that might make students more likely to be successful and also to be more likely to participate in a given experience, like visiting the Writing Center, Math Tutoring, or Supplemental Instruction.

The Center for Student Analytics uses a technique called Prediction-based Propensity Score Matching (PPSM) to quasi-experimentally estimate the causal impact of co-curricular participation on students’ likelihood to persist toward graduation.

(For greater detail see page 40)

THE POWER OF ANALYTICS

FACULTY HAVE THE OPTION of improving their Canvas course using a free add-on called Design Tools. The tool improves the aesthetic design of the Canvas content and makes the course more navigable.

Research has shown that small enhancements to the online course environment contribute to a meaningful experience for students. To assess the value of using Design Tools in Canvas, we ran an analysis to estimate the effect of using Design Tools on students’ course outcomes.

As shown in the graph, instructor use of Design Tools was associated with higher course grades for students overall. A significant interaction effect was found between the use of Design Tools and students’ first-generation status. This means that first-generation students achieved higher grades in courses taught by instructors who used Design Tools, actually outperforming continuing-generation students in courses that don’t utilize this courseware.

Faculty that want to learn more about how Design Tools can make Canvas courses beautiful and contribute to students’ academic experiences should schedule a consultation with an instructional designer at the Center for Innovative Design and Instruction.
WHEN PPSM WAS USED TO EVALUATE the effectiveness of the Writing Center on students’ well-being, we found that students who took advantage of this service were significantly more likely to persist into the next semester, even after controlling for baseline variability. As shown in the graph, Writing Center participants were 3.04% more likely to persist compared to matched comparison students.

Faculty are uniquely poised to help students realize the value of co-curricular experiences, like attending the Writing Center. Based on the above data, we strongly encourage faculty that teach writing-intensive courses to broadcast the value of this service to their students, both early and often each semester.

THERE ARE MANY FREE RESOURCES on campus that help students get the most out of their academic experience. Similar to the Writing Center, we examined the impact that the Aggie Math Learning Center (AMLC) has on students’ likelihood to persist towards graduation.

After controlling for baseline variability, we found participation in math tutoring was associated with a 2.49% lift in student persistence, as shown in the graph.

Math instructors should make students aware of the AMLC, where appropriate, and target outreach to students they believe would benefit most from the service. We know from research that faculty influence on student well-being is extremely important, making these referrals more critical.
**AS WITH THE WRITING CENTER AND MATH TUTORING, student participation in Supplemental Instruction was shown to have a significant positive association with student academic well-being.**

Student participation in Supplemental Instruction study groups was associated with a 2.69% increase in their likelihood to persist towards graduation, even after controlling for baseline variability.

This effect, displayed in the above graph, was pronounced for students early in their academic career and also for those who have been identified as being at greater risk for not remaining enrolled at USU. The overall findings of this analysis indicate that, when the resources are available, collaborating with the SI program is an excellent strategy for supporting student well-being and success.
INSIGHTS FOR UNIVERSITY LEADERSHIP

9. HIGH-PERFORMING DROPOUTS

10. WHY HIGH GPA STUDENTS LEAVE WITHOUT A DEGREE

11. A LITTLE FINANCIAL AID CAN MAKE A BIG DIFFERENCE

12. USUSA INVOLVEMENT
**High-Performing Departures**

**Not All Students Who Leave USU** are in academic distress or have low GPAs. In fact, a full 10% of our student body are at risk for leaving the institution without a degree despite having above-average GPAs.

As the university organizes around helping students to remain enrolled and be successful, it is important for all administration, faculty, and staff to recognize that high-performing students can experience significant episodes of distress that are not academic in nature. Our ability to identify and respond to such issues through early-alert analytics has already been a key factor in helping high-achieving students remain enrolled at USU with the right supports in place.

---

**Why High GPA Students Leave Without a Degree**

<table>
<thead>
<tr>
<th>Reason No. 1</th>
<th>Reason No. 2</th>
<th>Reason No. 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Program Alignment</td>
<td>Fewer Course Enrollments</td>
<td>Later Enrollment</td>
</tr>
</tbody>
</table>

**Low Program Alignment**

This is a measure of how similar a student’s course-taking patterns are to successful graduates in their same degree program. Low alignment may signal students’ lack of interest in the major, a lack of coordination with an academic advisor, or a poor connection to the program faculty.

**Fewer Course Enrollments**

High-performing students that leave USU without a degree are more likely to take fewer classes than their peers. For example, a high-performing student may only take 12 credits, instead of enrolling for 15-18. A frontline resource for helping these students enroll in more classes is close coordination with an academic advisor.

**Later Enrollments**

When any student enrolls later in the registration cycle (closer to the start of the semester), it can signal an increased likelihood to depart the institution without earning a degree (see page 8). This is particularly true for high-performing students, meaning academic advisors should be sensitive to instances when high-performing students delay enrollment.

---

**High-Performing Departures**

**WHILE MANY HIGH-PERFORMING STUDENTS** leave USU and return as transfer students at other institutions, many of these students leave higher education altogether, without a degree.

There are several common markers that a high-performing student might be less likely to remain engaged in the world of higher education. High-GPA students leave when they lack a strong connection to their academic experiences, most especially as manifest in their collaboration with an academic advisor. USU administrators should never underestimate the powerful influence well-resourced faculty and a well-trained advisor can have in helping their students remain engaged with their goals.
expenses like housing, books, fees, transportation, utilities, food, and tuition are factored into the overall cost of attending USU each semester—currently an average of $10,996.

We know from analytics that having at least a little financial aid can make a big difference. We encourage students to complete a FAFSA each year to make sure they are eligible for as many scholarships and grants as possible.

Additionally, we encourage an awarding strategy that ensures a more even distribution of scholarship and grant funds to as many students as possible, especially when we can avoid awarding any individual students at rates that exceed the average cost of attendance—$10,996. Interestingly, even when students receive a combination of financial aid that approaches that full amount, they are no more likely to persist towards graduation compared to students who receive less than half that amount (e.g. $4,000). As shown in the graph above, the biggest drop in student persistence actually occurs when students receive little to no financial aid.

In partnership with USUSA, we discovered that when students participate in scholarshipped and volunteer leadership positions at USU, they receive a measurable boost to their success rates, above what you would normally expect these already-high-performing students to achieve.

As shown in the graph, scholarshipped and volunteer student participants in USUSA persisted at a rate 3.26% higher than expected when compared to non-participant peers, after controlling for baseline variability.

USUSA offers students opportunities to participate in student leadership positions, such as clubs, student government, interest groups, volunteer positions, and service opportunities. Of course, the primary objective of these leadership experiences is to promote involvement, leadership development, empowerment, civic responsibility, and enhance academic success.
INSIGHTS FOR UNIVERSITY STAFF

13. 15-TO-FINISH
14. GPA CONSISTENCY
15. USUSA EVENTS
16. ONE MORE COURSE
FULL-TIME UNDERGRADUATE STUDENTS who take 15-16 credits are half as likely to leave USU without graduating compared to students who take 12-14 credits. As shown in the data points above, students who perform low academically but take 14 or more credits are more likely to persist than high-performing students who take 13 credits or fewer. This speaks to the powerful contribution taking a full course load makes to overall student well-being. As noted on page 7, taking any number of credits between 12 and 18 costs the same amount of money. Regardless of academic performance, economic environment, or race, students who take 15 credits are more likely to persist term-to-term than students who take fewer than 15. In fact, 66% (or two-thirds) of the undergraduate students who leave Logan campus do so following a term in which they took fewer than 15 credits.

ONE OF THE MOST IMPORTANT WARNING SIGNS of student distress is large drops in term GPA. Currently, this variable ranks sixth overall in predicting undergraduate retention across the entire USU system. As shown in the chart above, when a student experiences large drops in term GPA, their persistence rates decrease. For example, Joe Student earns a 3.6 term GPA during one semester and then the following semester earns a term GPA of 2.0. We would expect him to be less likely to achieve his post-secondary goals. In fact, students who experience a drop in term GPA greater than 1.5 quality points are 20 percentage points less likely to persist than average.

University staff can watch for students who experience large changes in semester GPA and intervene where appropriate. Timely intervention for students in academic distress can make the difference between having a plan to overcome the issues they are facing in their program and leaving higher education altogether.
**WE ALL KNOW STUDENT INVOLVEMENT** in social experiences at the university are important, but can attending a university dance really help students stay engaged and working towards their academic goals?

It turns out that participation in USUSA events, like the HOWL and Mardi Gras, influences students’ decision to remain enrolled at USU and persist toward graduation, even after controlling for baseline variability in students’ academic profile. As shown in the graph below, the average increase we see for students who attend social events sponsored by USUSA is a 2.56% lift in persistence rates from term to term. These gains are shown for students at all levels of the academic experience, but is stronger for students earlier in their academic career and less pronounced in later semesters.

While it may seem unusual that social events like dances would help students succeed academically, we know **social integration and a sense of belonging are an important part of making post-secondary experience effective**. The next time you see a flyer advertising The End of Year Bash, remember those events, on average, help an additional 118 students stay enrolled when they otherwise would have left our Aggie family.

**EACH COURSE STUDENTS TAKE** gets them one step closer to their goals at USU. This is particularly true for our part-time students. One of the biggest differences in success rates that we see for part-time students is between students who take just three credits and those who register for six.

We know it can be difficult for part-time students to balance all they have going on between school, family, and work responsibilities. However, these same students find that adding an additional course can help them be more successful, while also allowing them to progress towards graduation more quickly. Additionally, for most courses, taking six credits is actually cheaper per credit than taking three.
17. RESIDENCE HALLS
18. HIGH SCHOOL GPA VS ACT
19. USU 1010: CONNECTIONS
20. NEW-STUDENT ORIENTATION
**The Residence Hall Experience** is not only a fun part of being a university student, but can also help students stay enrolled.

Our recent analysis of the effect of living in the residence halls on student well-being found a significant lift in student persistence for all housing types. We also saw nearly twice as strong of an impact on students living in the Living Learning Community (LLC).

Living in the LLC involves a student experience centered on one of many different themes, such as the ecoHouse, Aggie Involvement, or the USU Honors program. While students at USU have many housing options, we encourage prospective students to consider spending at least a few semesters living on campus and benefitting from the enriched social environment the residence halls provide.

If you wanted to predict whether or not a student was going to be successful in college, would you rather know their High School GPA or ACT scores?

As we have built various prediction models that help us determine what forecasts students’ success at USU, we consistently see high school GPA showing up as a stronger predictor of student success than standardized test scores. High school GPA serves as a global measure of students’ academic abilities, especially compared to their performance on an exam on one particular day during their high school career.

Across the nation, universities are starting to catch onto this reality and change the way they use students’ high school grades and test scores to determine admissions decisions and scholarship funding. The ACT is still an important element of the college application process, but USU has recently updated their formula for calculating scholarship awards to more heavily weigh high school GPA compared to standardized test scores.

Don’t necessarily write off the importance of scoring well on standardized tests. However, remember that students need to work hard early and throughout their high school career to adequately prepare for success in college.
EACH YEAR, THOUSANDS of incoming freshmen participate in a course called USU 1010: Connections. This experience happens early in the semester and is designed to give students information about all the university has to offer and the tools they need to be successful.

Attending the Connections course makes significant contributions to students’ success. Not only are these students more likely to persist than their peers, but meaningful changes in their understanding of the purposes of a college education are associated with huge gains in their academic performance. In fall 2017, students who attended Connections experienced a 2.79% increase in their likelihood to persist toward graduation.

Additionally, first-year retention rates amongst students who participated in Connections with instructors who were above-average fulfilling the outcomes of the planned curriculum were 6% higher when compared to their peers, demonstrating the important value of the Connections curriculum.
THE USU ORIENTATION OFFICE EXPANDED orientation to include five online learning modules and an in-person experience on Logan campus each June and July.

Through our evaluation of these services, we discovered that **USU students who complete all five elements of New Student Orientation experience a 4.82% increase in their likelihood to persist toward graduation**, even after controlling for students’ previous demonstration of academic skills and abilities.

As shown in the chart above, completing the entire in-person and online orientation experience, including those modules that are completed around the beginning of fall semester, can significantly boost students’ likelihood to be successful.

Each year, as we welcome new students into the Aggie family, we will continue to emphasize the importance of completing the orientation modules so each student knows how to get the most out of their university experience.
SERVICES SUMMARY

SCHOLARSHIP OF TEACHING AND LEARNING PROJECTS

Instructors who are working through the promotion and tenure process can often benefit from a closer look at their course planning as they build out enhanced content and pedagogy each semester. The Center for Student Analytics offers a service to help faculty demonstrate how systematic changes they have made in their courses associate meaningfully with student success.

FACULTY TRAININGS & WORKSHOPS

Faculty have access to several analytics tools that can reveal meaningful associations between student performance in certain courses and graduation likelihood. By identifying student behaviors associated with higher graduation rates, this analytics tool helps faculty support student success through enhanced pedagogical practice. These tools can also help faculty recruit promising prospective students who are declared as exploratory, but who may do well in specific majors.

PROGRAM EVALUATION SERVICES

Program administrators have access to a team of program evaluation specialists at the Center for Student Analytics to assist in assessing the impact of programs and services on student well-being. This process uses a multi-part, collaborative consultation process to generate an executive summary containing insights into how co-curricular programs and services associate with meaningful changes in student academic well-being.

ANALYTICS SLEUTHING

This consultation service exposes pockets of student elasticity—areas that the university can optimize for student well-being—that can be intervened on in the classroom and through other co-curricular services, such as advising. Academic departments and programs working to increase their performance can use this service to identify key leverage points to improve student success.

ADVISING INTERVENTION AND EARLY ALERT SYSTEMS

Academic advisors have access to a tool called Inspire for Advisors that facilitates targeted outreach to students for whom our contact has the greatest potential for impact. Utilizing this tool has been associated with dramatic increases in student persistence from term to term.
METHODS

FACTOR IDENTIFICATION & RISK MODELS
In order to determine which measurable student variables are associated with students’ likelihood to remain enrolled and working towards graduation, the Center for Student Analytics incorporates data from the Student Information System (Banner), the Learning Management System (Canvas), and from a system that stores student attendance counts for many of our co-curricular and extra-curricular events like football games (Blackboard Transact). Hundreds of variables are leveraged in sophisticated prediction models to forecast how likely our students are to remain enrolled from term to term. As of the creation of this report, these models accurately predict 85.6% of the student outcomes being forecast.

As a side product of making these predictions and checking their accuracy each semester, we discover variables that have a higher association with student well-being and variables that are less associated with the outcomes the university community cares about. By sifting through this information, we uncover an increasingly clear picture of those experiences that closely align with student success and well-being. The bulk of the Student Insights Report is made possible through this risk model and the associated student variables it highlights as being critical to student success.

QUALITATIVE SURVEYS
Some of the insights provided in this report were created using information collected through qualitative surveys. Occasionally, USU will conduct targeted student surveys that solicit feedback regarding students’ satisfaction with the university experience. Whenever these data are available, the Center for Student Analytics relies on this expanded view to convey more comprehensive descriptions of the overall student experience.

PPSM
Software called Illume Impact runs a Prediction-based Propensity Score Match (PPSM) between co-curricular participants and non-participants to determine how program participation associates with student retention. Successful programs show a certain percentage “lift” in participants’ persistence rates from term-to-term, the basis for many of the insights provided in this report. USU contracts with a third-party analytics vendor, Civitas Learning, which hosts this software to provide us with the ability to analyze the impact of student participation in various co-curricular services and programs.

CANVAS DATA
A critical resource for developing greater understanding of the student experience is learning activity data collected in a Learning Management System (LMS). From years of exploring analytics insights provided to us by Canvas, we have learned that the time and attention faculty devote to creating high-quality digital learning environments for their students really matters. Summary analytics available in every Canvas course help faculty to see how and when individual students are engaging with the digital course content. This online interaction data helps us to understand how the virtual learning environment each faculty member curates can dramatically shape the academic outcomes students are empowered to achieve.

THE STATE OF HIGHER EDUCATION
As with any research enterprise, an important element of working with any data is understanding the context of the data that informs the analysis process. The Student Insights Report synthesizes insights we have gained from USU student data with insights gleaned from student development research literature across the globe. A complete picture of the well-being of our institution is not possible without thoughtful consideration of how our institution performs in comparison to the larger community of higher education. For more insights about how this report aligns with national trends, please reach out to any of our team members for a more in-depth conversation.