## **COMMUNITY INSIGHTS**

## Emerging Benchmarks & Student Success Trends From Across The Civitas

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## **COMMUNITY INSIGHTS**

In June 2016, we issued the first *Community Insights* report based on aggregated data from more than 2 million student records at 55 colleges and universities in our partner community. The ability to look across massive and disparate data sets to identify benchmarks, insights and often counter-intuitive trends garnered attention and interest, not only from our customers, but also across the international higher education landscape. The findings also sparked a vibrant conversation in the media, generating coverage and commentary in *NPR*, *The Atlantic, Inside Higher Ed* and many more, that considered the role that our findings could play in our collective understanding about what shapes, and inspires us to improve, student outcomes.

In this second issue of *Community Insights*, the size of the study has grown to include 4 million student records from 68 institutions. The findings reinforce and affirm the initial benchmarks, and also provide some new insights, while allowing us to dive into the research with more clarity, confidence and conscience.

The following insights reflect a deeper understanding around two previous benchmarks – the important role of Learning Management System engagement and the need to understand high GPA departures. We have also added a third benchmark, with findings inspired by a body of research concerning the predictive value of college entrance requirements.

## Community Insight 1 THE LMS ACTIVITIES THAT MATTER MOST



#### What the Data are Saying: Four LMS Activities are Consistently Most Predictive

Over the last decade and a half, institutions large and small have come to embrace Learning Management Systems (LMS). With broad adoption came broad assumptions.

For example, many have suggested LMS data is only important for online learning environments and is not meaningful or significant when it comes to understanding the behavior of on-ground students. Or, that all that really matters for student success are simple data points such as the number of logins. Some believe the grade a student is making is enough to confirm their trajectory toward successful completion.

But across millions of student records, patterns emerge. We are beginning to understand the predictive power of data available within an LMS. Although LMS data alone cannot provide a full view of the student journey, it reveals powerful insights when analyzed in conjunction with other data, often locked in silos or other disparate data sources on campus.

Following our first report, we received questions regarding the importance of LMS engagement. In particular, leaders across higher education asked us which LMS engagement or activity was most predictive of success. While this varies by institution, we have learned from our subsequent research that four types of LMS activities are more consistently predictive than others. This held true regardless of the type of institution or the segment of student population studied.

## Within our sample, the four most predictive types of LMS activities were:

- Attendance unique days visiting the online course (not count of logins)
- LMS Grades interim grades in the LMS
- Course Material Engagement
- Discussion Board Engagement

In each case, however, the predictive value of LMS data was not found in using raw data counts, pulled directly from the LMS. In fact, none of the most predictive LMS variables are from the raw data. **All of the most predictive variables are derived variables**. Derived variables are new data points calculated from raw. Whereas a raw data point could include a student's Cumulative GPA, the number of times she logged into an LMS, or her standardized test score, derived variables examine multiple points to represent the larger picture of what is happening, and therefore have more predictive power than single data elements.

For example, rather than the raw data point of a Cumulative GPA, a derived variable would look at a student's GPA in relation to her peers or her GPA trend over several semesters. Rather than the raw data point of number of logins, derived variables provide the context of a student's LMS activity in relation to her peers across her sections. These variables are dramatically more predictive of persistence than anything that is reported in the LMS itself. The following types of variables were created across LMS activities and added to predictive models:

- Relative variables This type of variable allows us to explore the comparison of the student to her peers in the same section at the same time. How far above or below the average is a student compared to her peers in the same course section? Relative variables are created for all types of activities from LMS reported interim grades to course content activity to attendance in the course.
- Consistency variables These variables track how consistent students are in their activities and interactions within the course, from attending to posting assignments, engaging in course material and participating in discussion boards. Consistency is highly predictive of persistence.



- Min and Max variables These variables measure the predictive power of the highest and lowest values for activities and grades for each student beyond the confines of the single course section the LMS reports.
- Average variables There is predictive power in average values across the student's courses for grades and different types of engagement such as discussion posts, course material activity, etc. Raw LMS data points look at the student in a single course and do not provide the broader perspective.

#### Partner Insight

For this insight, we looked at a partner community college and students taking their courses on-ground. This fall, we found that three of the top 10 predictors for on-ground, first-year students at the college were an LMS activity. Specifically, the number of days they visited the LMS compared to their peers (number two), their LMS grade averages compared to their peers (number six), and their consistency in posting to discussion boards for their classes (number eight).



**Figure 1.1:** In this view, the institution can see the top 10 Powerful Predictors based on their institution-specific data. This chart reveals that, after filtering for on-ground, first-year students, three of the top 10 predictors are based on LMS activity.

First-year students at this institution have a persistence rate of 77%. However, in looking more closely at the highest ranked LMS variable, we see that when students interact with the LMS less than the average, persistence drops to 62%, while students with more activity than their peers persist at 80% – an 18 percentage point difference. There are ~1,300 students at this institution in the active term with activity below this LMS engagement tipping point.



**Figure 1.2:** This chart demonstrates where students are in relation to the average for days of LMS activity. The institution can see that those students with significantly lower than average LMS activity (highlighted in blue) experience a drop in persistence rates to 37% – 40 percentage points below the average persistence for all first-year students.

Then, if we then look just at students with significantly less activity when compared to their peers, this drops persistence to 37%, which is 40 percentage points below average for first-year students. This finding represents ~332 students in this group in the current term. With this, the institution can use the Illume Student List feature to precisely identify an actionable, specific list of students for targeted outreach and support.

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**Figure 1.3:** To prepare to act on the insight, the institution selects the segment of students for planned outreach, then exports that student list. In the example above, the institution has selected only those students with very low likelihood to persist.

# Community Insight 1 THE LMS ACTIVITIES THAT MATTER MOST





## **BENCHMARKING THE CIVITAS**

This benchmark is based on 47 programs including 33 on-ground and 14 online across 38 institutions.

- Four types of LMS engagement are most predictive across all institution types: attendance, LMS grades, course material engagement and discussion board engagement.
- Overall, 69% of the institutions had LMS activity in their top 10 predictors for undergraduate students, growing to 85% when looking at only first-year students.
- All of the most predictive LMS features are derived variables.

#### Why It Matters

LMS data matter more than we could have imagined – for both online and on-ground instruction – but the way existing LMS platforms have presented the data has not provided the most useful signals. Institutions simply cannot see the full picture from raw LMS data alone, and need derived variables and data science analysis to fully understand students' likelihood to succeed. Derived variables provide a more contextual approach to analysis and allow institutions to spot trends with enough time to intervene with personalized outreach before it's too late.

Understanding the importance of the top four LMS activities can assist institutions of all types, but may prove especially useful to those that are putting a lion's share of their limited resources into first-year, traditional student initiatives.

Student success initiatives that currently utilize GPA as a trigger can use data from these four derived variables to understand student needs at a more granular level, and more precisely target resources to students who demonstrate risk indicators. Of the institutions in this study, LMS engagement was a top 10 predictor of persistence for 33 of them. Forty-one of 47 programs had LMS engagement in the top 10 predictors for first-term undergraduate students. Among our partners, persistence for students with LMS activity well below average dropped by significant percentages. Simply put, traditional on-ground first-year students who are not engaging the LMS in the ways defined above may be at risk and therefore, institutions should plan outreach to those specific students while they are still enrolled. When examined via derived variables, LMS engagement is highly predictive, especially with regard to consistency of attendance, grades in comparison to peers in the same section and relative engagement in the course content and discussion boards. And most importantly, it is highly actionable for faculty and staff to provide outreach in time to help students correct their trajectory and get back on the path to success – whether online or on-ground.



**Figure 1.4:** This bar chart demonstrates the consistency of LMS activity in the top 10 Powerful Predictors across various types of institutions.

## Community Insight 2

## GAINING DEEPER UNDERSTANDING OF HIGH GPA DEPARTURES



#### What the Data are Saying: Academic Performance is not the Primary Risk to Departure

As we expand the size of our study, we continue to see that students perceived to be highly successful now make up a new silent majority – leaving our institutions in shockingly high numbers. The data show us that it is not just academic struggle that indicates a student is at-risk.

#### **GPA Findings:**

Students Leaving, First-Year vs. Post First-Year

62 (A Institution	LL) s		<b>39</b> Access Institutions			
GPA < 2.0	2.0 - 3.0 GPA	> 3.0 GPA	GPA < 2.0	2.0 - 3.0 GPA	> 3.0 GPA	
first-year <b>34%</b>	21%	45%	FIRST-YEAR	19%	47%	
POST FIRST-Y	<sup>YEAR</sup> 38%	44%	POST FIRST-Y	37%	45%	
<b>30</b> Community	y Colleges		23 Selective Institutions			
GPA < 2.0	2.0 - 3.0 GPA	> 3.0 GPA	GPA < 2.0	2.0 - 3.0 GPA	> 3.0 GPA	
first-year <b>32%</b>	20%	48%	first-year <b>34%</b>	26%	40%	
POST FIRST-1	<sup>YEAR</sup> 38%	44%	POST FIRST-1	<sup>(EAR</sup> 42%	40%	
32 4-Year Insti	tutions		<b>16</b> Online Programs			
GPA < 2.0	2.0 - 3.0 GPA	> 3.0 GPA	GPA < 2.0	2.0 - 3.0 GPA	> 3.0 GPA	
first-year <b>36%</b>	22%	42%	first-year <b>32%</b>	18%	50%	
POST FIRST-Y	<sup>YEAR</sup> 40%	43%	POST FIRST-Y	34%	52%	
16 Research Ir	nstitutions		59 On-Ground Programs			
GPA < 2.0	2.0 - 3.0 GPA	> 3.0 GPA	GPA < 2.0	2.0 - 3.0 GPA	> 3.0 GPA	
FIRST-YEAR	27%	40%	FIRST-YEAR	22%	44%	
5570						

**Figure 2.1:** This chart provides the break out of first-year and post first-year student departures sorted by institution type.

Across almost 4 million student records at 62 institutions, we found that **98.3% of these institutions are losing more students with 2.0 GPA or higher than below 2.0**. A shocking 44% of the non-persisting students have a GPA of 3.0 to 4.0. *Most students who leave their college or university have GPAs at or over 2.0 and almost half have GPAs at or over 3.0.* 

In this study we examined two years of data representing 3.97 million students. During those two years, nearly half a million students with 2.0 GPA or higher left their colleges or universities. As found in our previous research on this topic, there is only slight variance between institution type. However, significant variance does exist between firstyear students leaving (66% with 2.0 GPA or higher) and those students leaving beyond their first year (82% with 2.0 GPA or higher). When we look at the percentage of student departures with higher than 3.0 GPAs, there is little variance between first-year and post first-year students.

When we look at risk assessments tied to GPA, we must look beyond conventional GPA threshold constructs that assume students with 2.0 GPA or higher have diminished risk. Understanding their unique GPA tipping points can help institutions to set benchmarks they can then use to determine where the GPA threshold for risk exists at their institution. A GPA tipping point is the GPA at which a student becomes more likely than average or acquires an above average likelihood to persist at the institution.

Traditionally, many institutions have set 2.0 as the GPA tipping point. We see in the data this is an inaccurate assumption as the average tipping point across institutions is 2.4. Though there is not much variance in average GPA tipping points by institution type, it is important to note that **institution-specific GPA tipping points ranged widely** – from a 1.3 GPA tipping point minimum at one institution all to way to a 3.1 GPA tipping point for another.



Moving the lens from a generalized GPA expectation for first-year students to focused GPA tipping points can help more students achieve their goals. We saw a substantial variance between first-year and post first-year students with a difference of almost half a letter grade. That said, the data show that students are leaving, in high numbers, above the GPA tipping point, pointing again to the fact it's not just academic failure that causes students to leave.

And it's also important to note that some may say community college high GPA departures are leaving solely to transfer out. A recent Community College Research Center report cited research (Horn & Skomsvold (2011); Hossler et al. (2012); Shapiro et al. (2013)) showing over 80% of community college students intend to earn at least a bachelor's degree. However, only about a quarter end up transferring (20% of these students earn an associate degree or certificate first). Only 17% complete a bachelor's degree.

GPA Tipping Points Findings: All Students						
62 (ALL)		first-year	post first-year 2.6	delta		
Institutions	2.4	2.2		0.4		
<b>30</b>	all	first-year	post first-year	delta		
Community Colleges	2.3	2.0	2.5	0.5		
<b>32</b>	all	first-year	post first-year	0.4		
4-Year Institutions	2.6	2.3	2.7			
<b>16</b>	all	first-year	post first-year	delta		
Research Institutions	2.5	2.4	2.7	0.3		
<b>39</b>	all	first-year	post first-year	delta		
Access Institutions	2.4	2.1	2.5	0.4		
23	all	first-year	post first-year	Delta 0.2		
Selective Institutions	2.5	2.5	2.7			
<b>16</b>	all	first-year	post first-year	delta		
Online Programs	2.5	2.2	2.7	0.5		
59	<sup>ALL</sup>	first-year	post first-year	delta		
On-ground Programs	2.4	<b>2.1</b>	2.6	0.5		

**Figure 2.2:** The GPA Tipping Point for all students at each institution did not vary widely by institution type, however differences in first-year as compared to post-first year at each institution can provide useful insights.

#### Partner Insight

For this finding, we looked at a partner 4-year, public research institution with an average undergraduate persistence rate of 87%. We found that 31% of nonpersisting students had a GPA of 3.0 or higher. In addition, in looking at Cumulative GPA in Illume, we found that the tipping point where students became disproportionately likely to persist is 2.5 for this institution. Almost half (49%) of all non-persisting students had GPAs of 2.5 or higher.



**Figure 2.3:** This chart provides the institution with a view of the GPA tipping point at which point students increase their likelihood to persist. This does not mean all students above the GPA tipping point will persist. In fact, the chart demonstrates that almost half of the non-persisting students at this institution have GPAs of 2.5 or higher, as shown in the area highlighted in blue.

When Illume was filtered to view only students with a Cumulative GPA of 2.5 or higher, we see that the persistence rate jumps to 92% overall. However, if we add a filter for those with the lowest persistence prediction scores (in the bottom quintile) we see that the persistence likelihood drops to 69% – 23 percentage points lower than the average for high performing students. At this institution, there are 868 students in the current term with high GPAs (>=2.5), but bottom quintile prediction scores.



**Figure 2.4:** Because grades are not the only indicator of risk, the institution selected high GPA students then filtered in to understand their persistence prediction distributions. At this institution, 39% of the high GPA students have a moderate or higher risk (yellow, orange and red) of not persisting.

## Community Insight 2 GAINING DEEPER UNDERSTANDING OF HIGH GPA DEPARTURES





**Figure 2.5:** This graph demonstrates that for this institution, students taking six or more credits per term have significantly higher likelihood to persist than those highlighted in blue taking less than six credits.

In looking at the Powerful Predictors for this group of students in the bottom quintile, we see that the number one predictor is the average number of credits attempted each term in the prior year. Looking more closely we see that taking less than six credits per term in the prior year is highly predictive of risk for these students. When we filter by average credits attempted and highlight the area for less than six credits, we see the persistence rate drops to 54%, which is 38 percentage points lower than the average for students with GPAs at 2.5 or higher.

By diving into this data this way, this institution now knows which high achieving students are at risk when they had otherwise been hiding in plain sight. There are 189 students in the current term in this group with only a 54% likelihood to persist (GPAs >=2.5, bottom quintile prediction scores, and who took less than six credits on average per term in the prior year.) From here, the institution can use the Student Lists feature to enable outreach directly to these specific students and providing critically timed, personalized support.

### Why It Matters

At most institutions, student success initiatives are not reaching an important group of struggling students – often because the way in which they're struggling doesn't fit our preconceived notions of students in need of outreach. Much of the energy and resources in initiatives has focused on low GPA and first-year students. We now know that after the first year, only a small portion – in this study 18% of the nonpersisters, leave with GPAs below 2.0.

Moreover, standard at-risk interventions based on GPAs may place a disproportionate focus on first-year students. In firstyear populations studied, 66% of non-persisters had GPAs of 2.0 or better, but in looking at students beyond the first year, **82% of the non-persisters had GPAs of 2.0 or better.** Institutions can benefit by rethinking how they view risk when they recognize that post first-year students who appear to be progressing well may be troubled by issues beyond academics.

Beyond the pressing moral imperative of reaching out to students in need, the fiscal cost of loss and re-acquisition of new students to meet enrollment and graduation goals is beyond what most institutions can bear, especially with the move from access to completion agendas and performance-based funding. The challenges faced by students leaving with high GPAs may be tied to life, logistics, psycho-social challenges or finances. To intervene with the right action at the right time, we need to be able to look at the whole student across all of their courses and activities, connecting disparate data in ways that are actionable and meaningful.



## **BENCHMARKING THE CIVITAS**

This benchmark is based on a data set of 3.97 million students from 62 institutions, including 30 community colleges and 32 universities.

- Of these 62 institutions, 23 have selective admissions and 39 are access admissions institutions.
- 59 offer on-ground programs, 16 offer online programs.
- 98.3% are losing more students with 2.0 GPA or higher than below 2.0.
- 44% of non-persisters come from 3.0 4.0 GPA.
- 34% of non-persisters come from 2.0 3.0 GPA.

## Community Insight 3

## THE PREDICTIVE VALUE OF COLLEGE ADMISSIONS



#### What the Data are Saying:

High School Performance May be a Better Indicator of Higher Ed Success than Norm Referenced College Admission Tests

For decades, scholars and practitioners have examined the relationship between high school performance and standardized assessments like the SAT or ACT and college success. Our data confirms a longstanding body of research that suggests that high school data may be more predictive of a student's likelihood to persist than scores on standard college admission tests. In short, we found **no institutions for whom the SAT or ACT test scores were significantly more predictive than high school data**.

In examining the high school data (defined as high school class percentile or high school GPA) from 440,000 student records affiliated with our partner institutions, we found that high school data is often more predictive than SAT or ACT test scores in predicting first-year student success. In fact, we found that for 50% of the institutions studied, high school data was *significantly* more predictive of student success than the SAT or ACT. And for the other 50% of institutions, high school data is equally as predictive as the norm referenced college admissions tests.

#### Partner Insight

For this partner insight, we looked at a 4-year public research institution with an average undergraduate first-year persistence rate of 89%. We found that the number 5 predictor was High School GPA while the highest ranked test score came in at number 10 – ACT Reading Score.



**Figure 3.1:** This chart shows the specific Powerful Predictors for the selected student segment. For this group, high school GPA is predictor number 5 and ACT follows at predictor number 10.

To look more closely at the relationship between admissions test scores and GPA, we built a Paired Predictor Plot – which allows for comparison between the two predictors. The four quadrants separate the data by the median values. We saw the highest persistence levels among students with above the median High School GPA (3.65) but below the median ACT Reading score. There was minimal difference in persistence based on whether the student's ACT Reading Score was higher or lower than the median. However, there was a 5 percentage point drop in persistence among students who had above-median ACT scores, but lower than median High School GPA.

Then, by applying the prediction percentile filter to select the bottom quartile, we see that **the lowest predicted persistence rate is the group of students with above the median ACT scores but below the median High School GPA.** Their persistence rate is 82%, which is 7 percentage points below the average for first-year students. At the partner institution, there are 223 active students in the current term in this group.





## **BENCHMARKING THE CIVITAS**

This benchmark is based on a data set of 440,000 students from 17 institutions. The universities and colleges students were selective admissions institutions with both high school data and standardized test scores available for analysis.

- The standardized test scores analyzed were either SAT (Math, Reading and Total Score) and/or ACT (Composite, English, Math, Reading and Science).
- For 50% of the institutions, high school data was found to be significantly more predictive than test scores. For the other 50%, high school data and at least one standardized test score were equally predictive. No institutions had a test score that was significantly more predictive than high school data.

#### Why It Matters

Capable, committed students – especially underserved populations – may not be given the full opportunity to achieve their education, career and life dreams if institutions rely solely on ACT and SAT test scores to determine eligibility and likelihood for success – or if they over-index on these test scores. The research confirms a body of work that is calling on institutions to take a broader and deeper view of student success. By considering more variables than what is represented with a single test score, more colleges and universities could extend their reach and mission to students who may be left out of higher education's social and economic promise.

Based on our findings, institutions who are not collecting high school data may benefit from including this information in their view of a student's likelihood to be successful, particularly in their first year. Our research indicated the predictive power of high school data, even for students who had completed high school a considerable number of years prior. And, as administrators, faculty and staff work to better understand non-cognitive and behavior assessments, they can benefit from conversations and research that use these student data to help enrolled students understand how their commitment and perseverance to succeed – often as evidenced in high school performance – has meaning and value, in college and in life.

This is a complex issue. However, as our institutions process the signal from admissions and high school data, it's important that we continue to explore the data's relationship with student success. We look forward to engaging with thought leaders and further investigating these data and research findings in future reports. In doing so, we expect to glean broader and deeper understandings that can inform our community of practice and ensure every student has every possible opportunity to be successful.

## **ABOUT THE COMMUNITY INSIGHTS REPORT**

Community Insights is an on-going, research-based project with reports based on collective data from across the Civitas Learning customer base. This particular study included almost 4 million student records.

The data was analyzed using Civitas Learning's Student Insights Engine, our tailored data science and our Illume<sup>®</sup> application. Illume allows institutions to use Powerful Predictors and sophisticated filters to better understand their students and what can really help them succeed.

## **ABOUT OUR PROCESS**

#### Better Intelligence Through Unique Predictive Models.

We take in data from disparate silos and unify the data, and derive features. We see 95% of the predictive power of our Student Insights Engine and action apps coming from derived features that inform more than 1,500 predictive models.

Our data scientists and engineers provide each college or university partner with dozens of unique models that create a DNA of their data. This informs a series of institution-specific insights and actions that are uniquely tuned to the needs and opportunities of each institution and the students they serve.

## **ABOUT CIVITAS LEARNING**

Civitas Learning<sup>®</sup> is the Student Success Platform for higher education. Our Student Insights Engine<sup>™</sup> powers initiatives that dramatically improve student success. Our predictive analytics and connected applications provide administrators, faculty and advisors with a 360-degree view of student behavior and engagement, and the ability to identify and deploy interventions in real-time. Our growing community includes more than 285 partner institutions reaching more than 6.5 million students. Learn more at www.civitaslearning.com.



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