

OUR UMBC

PRIORITIES AND ACTIONS TO
ADVANCE EXCELLENCE
UNIVERSITY RETREAT 2018





*Building and Using an Analytics Ecosystem to
Improve Student Success at UMBC:*

The end of the beginning

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Associate Provost



- Today's (very short) game plan
 - A tour of some of the key components and tools that are key components of our analytics capabilities and infrastructure
 - Showing you some of the important early strides made by the Data Science Team
 - How we're bringing together pieces of information to improve student success
 - Finally, describing some of our early pilots based on the analytics and conducted in partnership with student support offices, departments, and faculty



- The data warehouse is the foundation upon which our analytics is built.
 - It reduces implementation time and costs for tool development. The result of this is that our vendors want to work with us, and have adapted their product to fit our needs
 - It allows us to quickly, and fairly easily, to access our own data for in house analysis
 - My sense from talking to colleagues around the country is that this foresighted investment is the envy of many institutions and key to many of our successes



- The second key component of our analytics “ecosystem” is our learning management system (LMS) or Blackboard
 - The campus is a national leader in using Blackboard to improve student outcomes; it’s key to pilots we’re developing
 - It’s also the case that information students’ engagement with the LMS (including checking their grades in the gradebook) is a very powerful predictor of whether or not we retain them (persistence)
 - As we’ll see, courses that actively use Blackboard have an important impact on student success



- We've added new vendor-provided tools that help improve student success. I'll highlight two
- Civitas-Illume helps us understand which students are less likely to persist, courses where low passing grades could be signs of trouble, and can help us to understand which of our many interventions are most effective at helping students
 - Example: a large proportion of students who leave UMBC are in good academic standing (Cumulative GPA's > 2.0)



illume
PERSISTENCE SCRATCHPAD NUDGE HUB
☰ 🔍

SAVED FILTERS

- mentor bio
- mentor cs
- mentor mento psy
- transfer students

FILTERS

- Age
- Campus
- College
- Completed Terms
- Degree
- Degree Program
- Department
- Ethnicity
- Financial Aid
- Full-time vs. Part-time
- Gender
- Institution GPA
- Prediction Percentile
- Race
- Start Term
- STEM
- Student Modality
- Transfer Credit
- Transfer Institutions
- Undergraduate Type
- Military Affiliation

OVERVIEW

ACTIVE FILTERS [Clear All](#)


No filters selected

4,783 of 4,783 Active Students

[Save Filter](#)


PERSISTENCE PREDICTION

Active Filter - 4,783



91%

All Students - 4,783

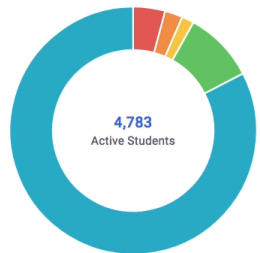


91%

Summer 2018 - Fall 2018

PREDICTION DISTRIBUTION - SUMMER 2018 - FALL 2018


Very Low	4%
Low	2%
Moderate	2%
High	9%
Very High	83%



4,783
Active Students

POWERFUL PREDICTORS [Show all](#)

1 Institutional Credits Earned Ratio (Prior Term)	6 Average Number of Days Enrolled Before Start (Current Term)
2 Is Full Time (Current Term)	7 Degree Program Alignment Z-score (Cumulative)
3 Is First Time In College	8 Pell Grant Aid Per Attempted Credit Hour (Cumulative)
4 Major CIP Code 2 Digit	9 Marital Status Id
5 Academic Standing (Prior Term)	10 Blended Institutional Credits Earned Ratio (Cumulative)





- Blackboard Predict may help us to identify students who may be at risk of not passing a course earlier in the semester than our existing early alert systems
 - When combined with e-textbook usage, we may be able to guide students to additional support as early as the fourth week of classes
 - When Predict is combined with the existing first year alert program, the results are very accurate, predicting something with close to 90 percent accuracy



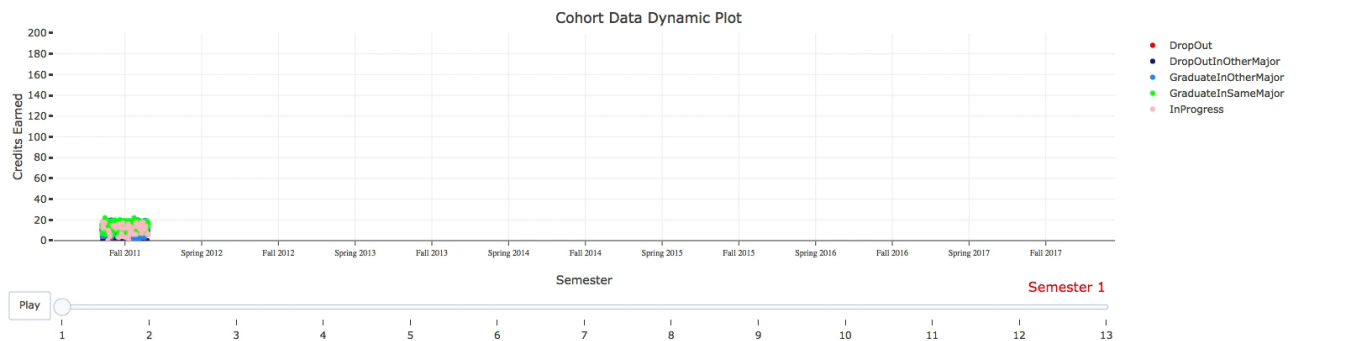
- Our in-house Data Science Team is generating valuable, and potentially actionable, insights using advanced techniques and visualizations of the data
 - The team consists of
 - Jessica Gronsbell UMBC '17 (Math, now enrolled in our Data Science Masters Program)
 - Sayali Kale UMBC '19 Masters in Information System Program
 - Jiayong Lin UMBC '18 (CS, now enrolled in the Computer Science Masters Program at UMCP)
 - Gregory Watson UMBC '18 (Math, gainfully employed)
- They are working on assessing the impact of evidence based pilots and visualizing students' pathways towards degrees



- Showing the evolution of a cohort (pilot):

Cohort Analysis

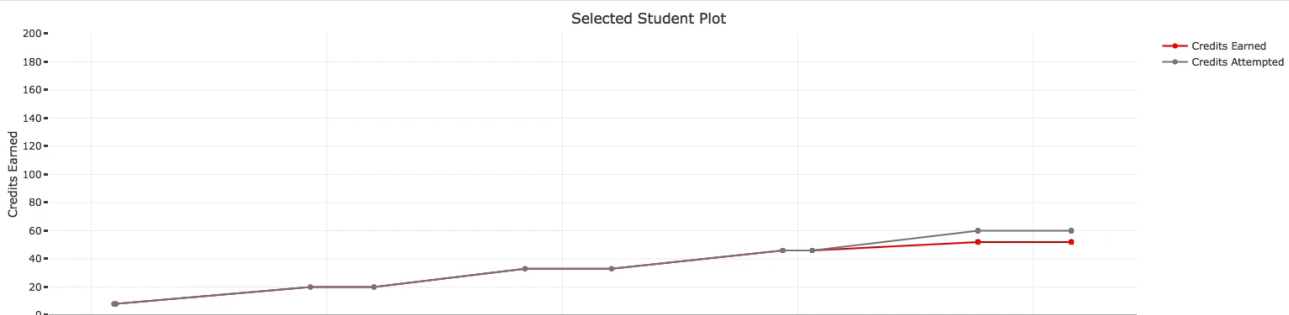
Start Term:
Major or College:
Status:
Admit Type:
Gender:
Ethnicity:



Four_Year_Graduation_Rate	Six_Year_Graduation_Rate	Leave_UMBC_Rate	Graduate_In_Same_Major_Rate	Avg_Final_GPA	Avg_Total_Credits	Number_Of_Students
40.8%	63.6%	33.2%	38%	2.87	95.16	1273

Use *Box Select or Lasso Select to view Average SAT and Average HighSchoolGPA

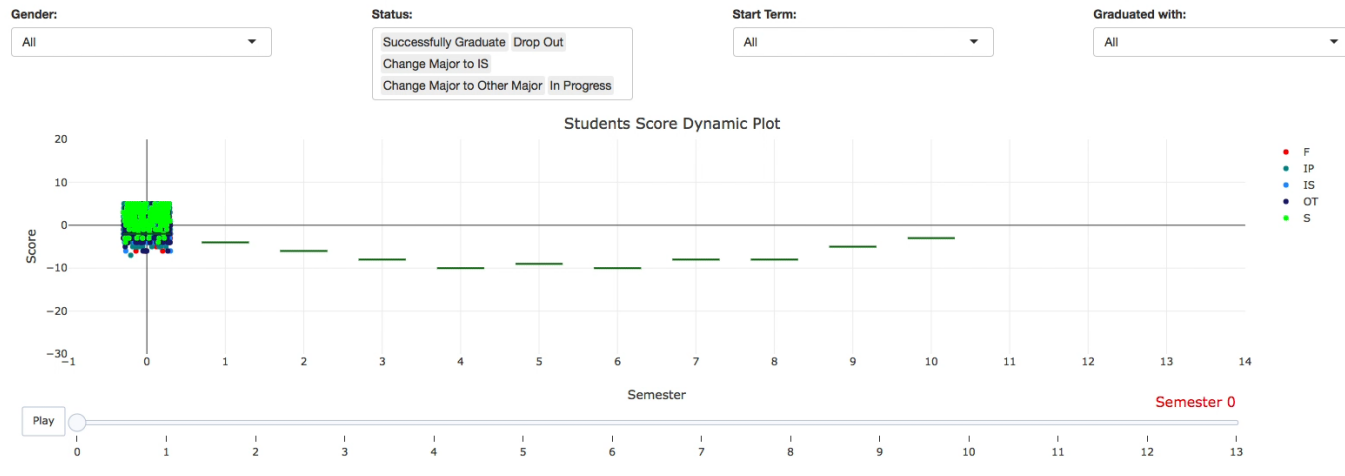
- [Download Lassoed Students Details](#)
[Download Lassoed Students Summary](#)
[Download Lassoed Students Student Key](#)



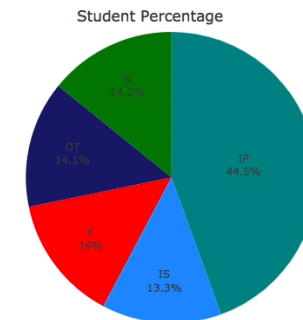
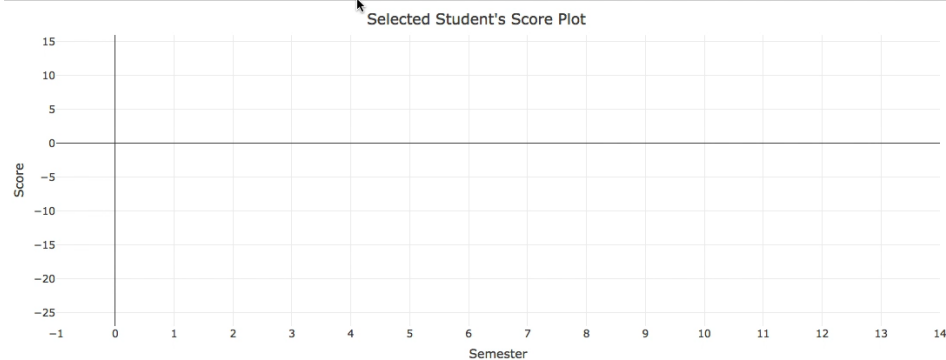


- Showing progression through a major (pilot):

Computer Science Student Scoring System



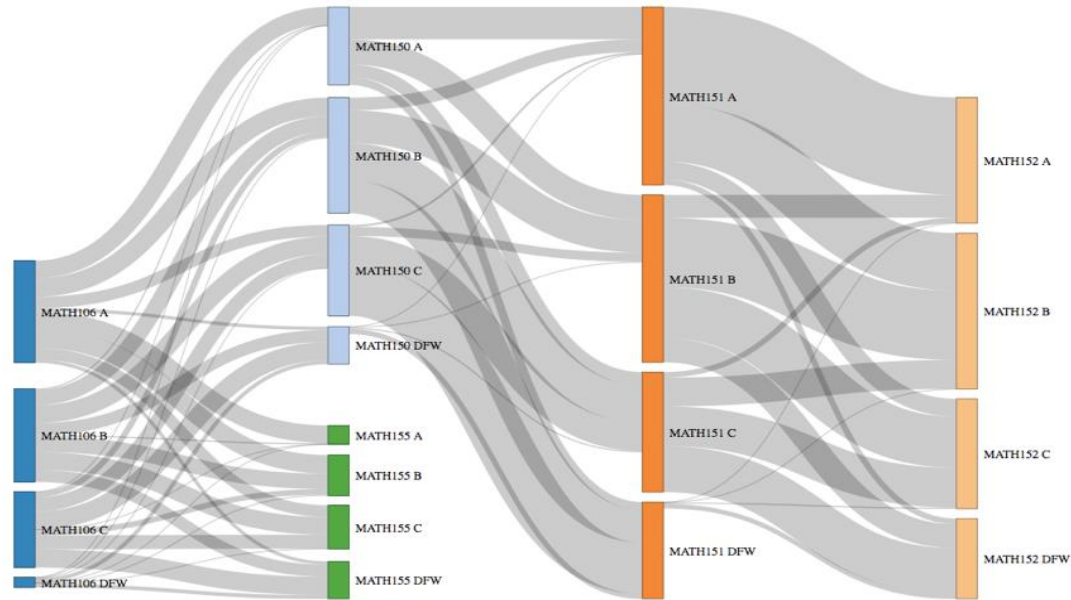
Use *Box Select or Lasso Select to view Average SAT and Average HighSchoolGPA



Click on Student to View His/Her History



- Showing how students move through the foundational math sequence (pilot; here, foundational means Math 106-155)



- From this and some associated work, Jess drew the conclusion that, “students maintain or decrease their grade more often than they increase it [and] the lower the course that a student starts at, the more likely they are to decrease in performance in the next course.”
 - This is a key insight for advisors helping students chart a path through programs requiring higher level calculus



- As you can imagine, and see, we're trying to organize the information coming in from many different sources to provide insights that improve student outcomes
- A key group for that is the Persistence Committee (2/3 student facing, 1/3 D&A ppl.)
 - We're gearing up for our second year of work
- One thing we realized early on is that students face "persistence risk" and "academic risk" and the two are not always the same thing
- We also observed that students display combinations of factors that put them at risk, reinforcing what practitioners have known all along



- To organize this information, we developed a Persistence Report
- Version 1.0 was an Excel sheet that looked something like this:

Student Information					Key Flags						Secondary Flags			
EmployeeID	Admit Term	Acad. Level	College	Major	Total Key Flags	Persistence	Poor Acad. Standing	Low GPA, High Credit	FYI Alert(s)	Holds	Drop in GPA	UGST	Commuter	LMS Below Avg.
4000071597	Fall 2016	Junior	CAHSS	POLI BA	3	High	X	X		FIN	X			X
3000596936	Fall 2013	Senior	CAHSS	ECON BA	3	High	X	X		FIN	X			
3000619260	Spring 2015	Junior	CAHSS	PSYC BA	3	Very High	X	X	X					X
3000808374	Fall 2015	Junior	CNMS	PHYS BS	3	Low	X	X			X			X
4000073806	Fall 2016	Junior	CNMS	MATH BS	3	Very High	X	X		FIN				
3000400807	Fall 2012	Senior	CNMS	BIOL BA	2	High	X	X						X
3000515142	Fall 2013	Senior	COEIT	CENG BS	3	Very High	X	X	X		X		X	
3000586939	Fall 2014	Junior	COEIT	IFSM BS	3	Very High	X	X		FIN			X	X
4000103149	Fall 2016	Sophomore	COEIT	IFSM BS	3	High	X	X	X		X			

- It took a lot of time and specialized skills to put together and keep current, so we're working on a new version that resides in the data warehouse



- Finally, we've worked on a variety of pilots using analytics to identify students that receive a behavioral nudge...with promising results
- You've heard about the nudge provided to students repeating foundational math courses
- That pilot led the Provost's office to fund a pilot to deliver SI to Financial Accounting classes. There, the results suggest large increases in student success
- An instructor in Psychology helped us pilot nudges to students that Blackboard Predict flagged as at risk. All of those students met with the instructor, all were actually at risk, and all ultimately passed the course
- We're working with the Math and Stat Department to pilot a technology solution to help them better monitor and incentivize attendance.
- Analytics are only useful if they lead to insights that are actionable and acted upon. Over the next year, we're looking to increase the scale and scope of our pilot programs, as well as find partners for new ones