



FLORIDA STATE
UNIVERSITY



Creating a Bigger Data Tent for Student Success

Nancy Young, UMBC

Rick Burnette, Florida State University

Darlena Jones, Association for Institutional Research

About AIR

- Nearly 4,700 members from 40+ countries
- 89% of members are from postsecondary institutions in a wide range of sectors and enrollments
- ~34% of members are assessment professionals



Forum

- 2,000+ attendees
- ~300 educational and networking opportunities
- Digital Pass gives free access to select Forum presentations



Education

- Data & Decisions® Academy
- IPEDS Keyholder courses and workshops
- A Holistic Approach to IR
- NCES Data Institute course and institute
- NSF public-use data sets
- *Survey Research – coming soon!*



eAIR

- Over 9,000 subscribers received this free newsletter covering topics of interest to assessment and analytics professionals



Research and Dissertation Grants

- The Access Group and AIR host a grant competition promoting scholarship on issues related to access, affordability, and value of graduate and professional education

www.airweb.org

About CIMA

The Commission on Information, Measurement, and Analysis is a cross-functional group with members from all APLU councils:

- Addressing opportunities and challenges associated with our ever-evolving data, assessment, and analytics landscape
- Informing the APLU community of best practices and emerging data, measurement, and analytics trends
- Improving data infrastructures, assessment, strategic transformation and fiscal and administrative management

About CSA

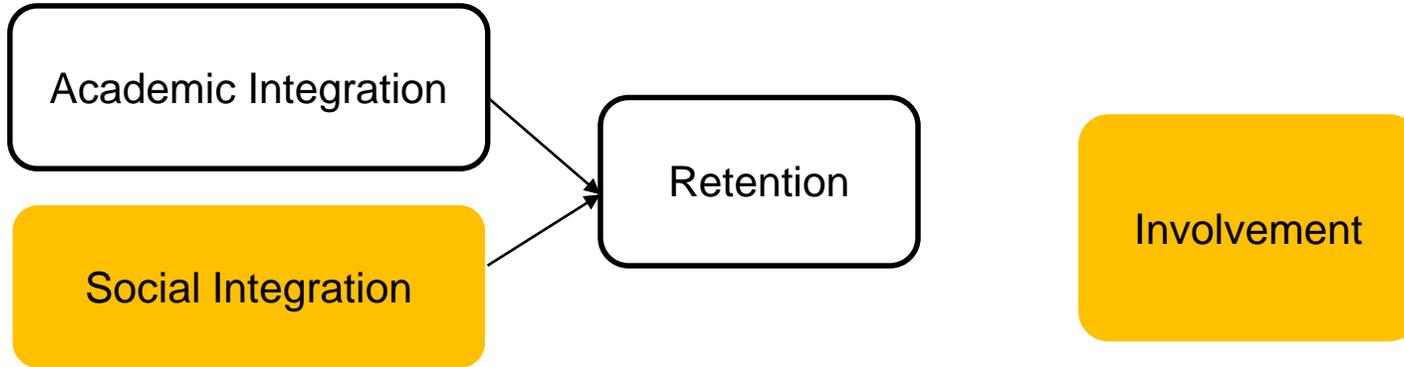
The Council on Student Affairs is one of the operational councils of composed of the chief student affairs officers at member institutions and systems.

CSA advocates within APLU and works cooperatively with other Councils and Commissions to enhance institutional effectiveness and the student experience in:

- the student experience
- co-curricular opportunities
- personal and professional growth
- learning, progress, and completion
- mental and physical health and wellness
- fundamental needs such as housing, financial aid, transportation, and/or food.

**Why Discuss Student Affairs'
Data?
Why now?**

From Theory to Predictive Analytics



Predictive Analytics and Student Engagement

Approximately 41% of US colleges and universities are using predictive analytics to enhance student success outcomes. (KPMG, 2015).

Available literature suggests that data analytics have focused primarily on academic and learning management systems. (Arroway, Morgan, O'Keefe, & Yanosky, 2016).

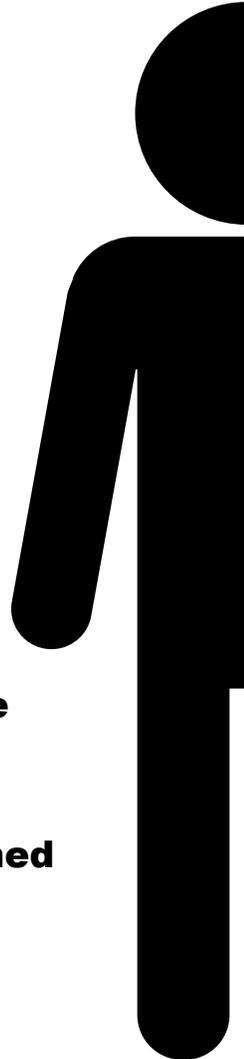
A gap in the literature exists regarding how student engagement data is used in predictive analytics. (Burke, Parnell, Wesaw, & Kruger, 2017).



UMBC is the first Civitas Learning Partner that has student engagement data available to include in predictive models.

Traditional SIS Data

Blackboard Activity
HS GPA
Class Registration
Cumulative GPA
Admit Type
Credits Attempted
Terms Completed
SAT Score
ACT Score
Credits Earned
Math Placement
FYI Alerts



“...while student affairs professionals are called on to implement intervention strategies..., student engagement data are not often included in predictive models.”

(Burke, Parnell, Wesaw, & Kruger, 2017).

Data Picture including Student Affairs Data

**Supplemental
Instruction**

FYI Alerts

Blackboard Activity

HS GPA

Class Registration

Cumulative GPA

Admit Type

**Credits
Attempted**

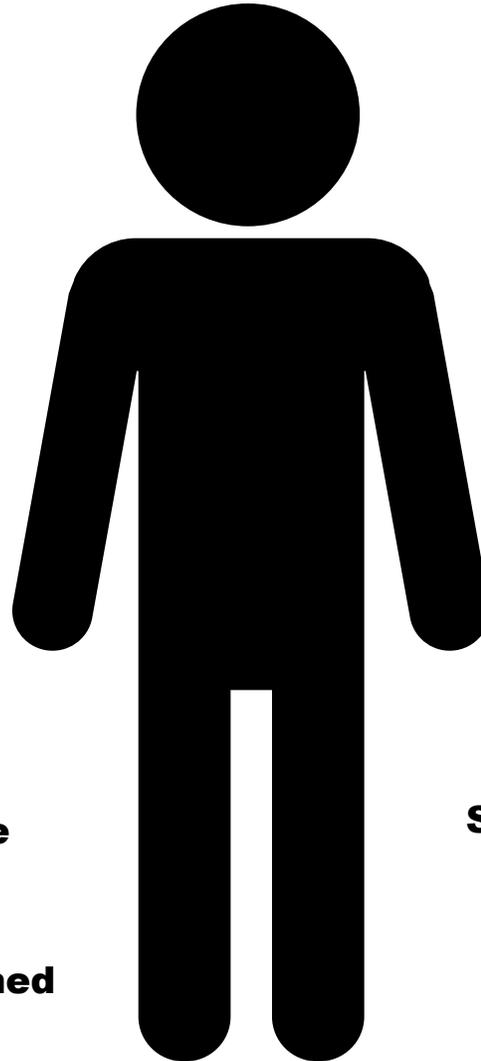
Terms Completed

SAT Score

ACT Score

Credits Earned

Math Placement



**Welcome
Week**

Pangea III

Summer Orientation

INTERACT

Resident Assistant (seb)

Student Org President

Commuter Assistant

**Retriever Leadership
Institute**

Advocate

Co-op

Career Counseling

STRIVE

Research

Career Fair

Internships

Club sports and Intramurals



EDUCAUSE

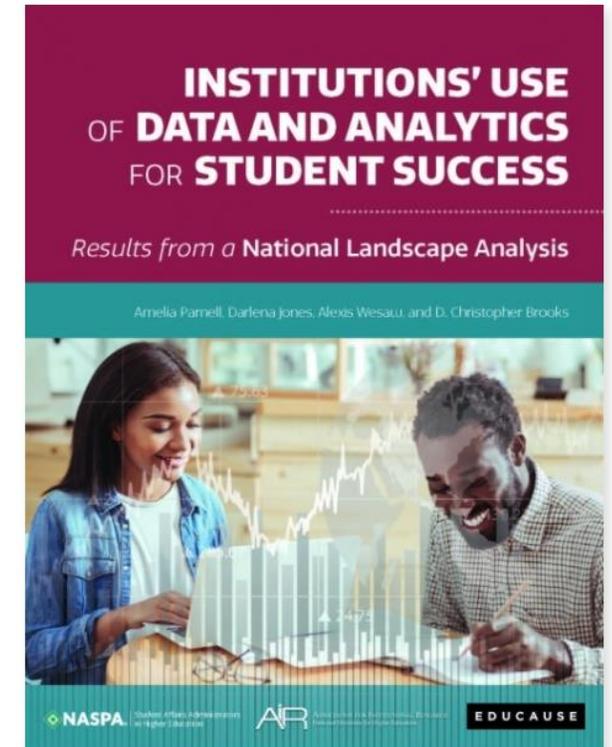


Institutions' Use of Data and Analytics for Student Success

National Landscape Analysis

- Partnership between NASPA, AIR and EDUCAUSE
- Focused on four core areas
 - Types of student success data projects
 - Structures in place
 - Level of coordination
 - Programs, interventions and outcomes
- Methodology
 - Surveyed members from October to December 2017
 - 970 responses (894 distinct institutions)
- Download free report:

www.naspa.org/rpi/reports/data-and-analytics-for-student-success



Most Institutions Invest in Analytics

Table 1. Institutions' Investment in Data and Analytics, by Institution Size

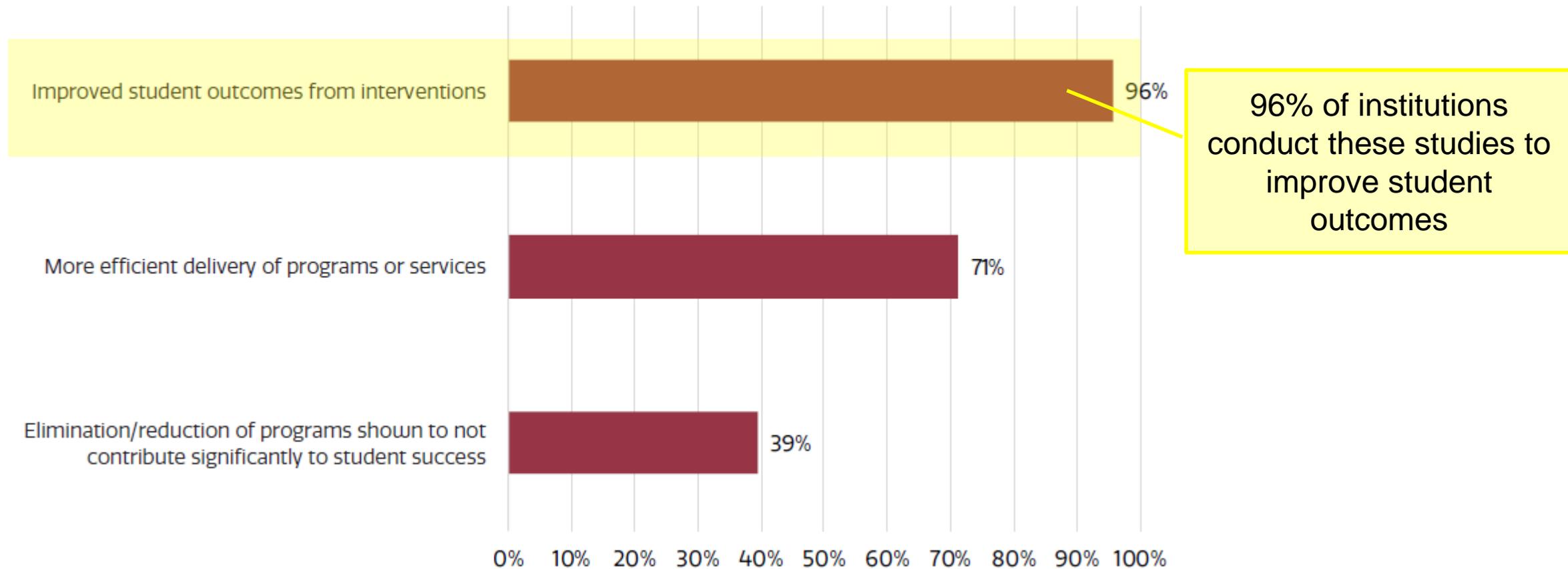
	DESCRIPTIVE					PREDICTIVE				
	Under 1,000 (N = 99)	1,000–4,999 (N = 336)	5,000–9,999 (N = 157)	10,000–19,999 (N = 127)	20,000 and over (N = 121)	Under 1,000 (N = 99)	1,000–4,999 (N = 338)	5,000–9,999 (N = 158)	10,000–19,999 (N = 127)	20,000 and over (N = 120)
No investment	12%	7%	6%	3%	2%	12%	10%	8%	7%	2%
Minor investment	51%	57%	45%	47%	29%	48%	50%	50%	43%	25%
Major investment	34%	32%	48%	48%	65%	36%	36%	41%	49%	73%
Don't know	3%	4%	1%	2%	3%	3%	4%	1%	1%	1%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Note. Percentages may not total to 100% due to rounding.

On average, ~90% of institutions invest in descriptive analytics and predictive analytics

Goals for Conducting Student Success Studies

Figure 1. Institutions' Goals for Conducting Student Success Studies (N = 389)



Studies Conducted Annually

Table 4. Types of Studies in Support of Student Success (N varies)

List of studies created
7 themes

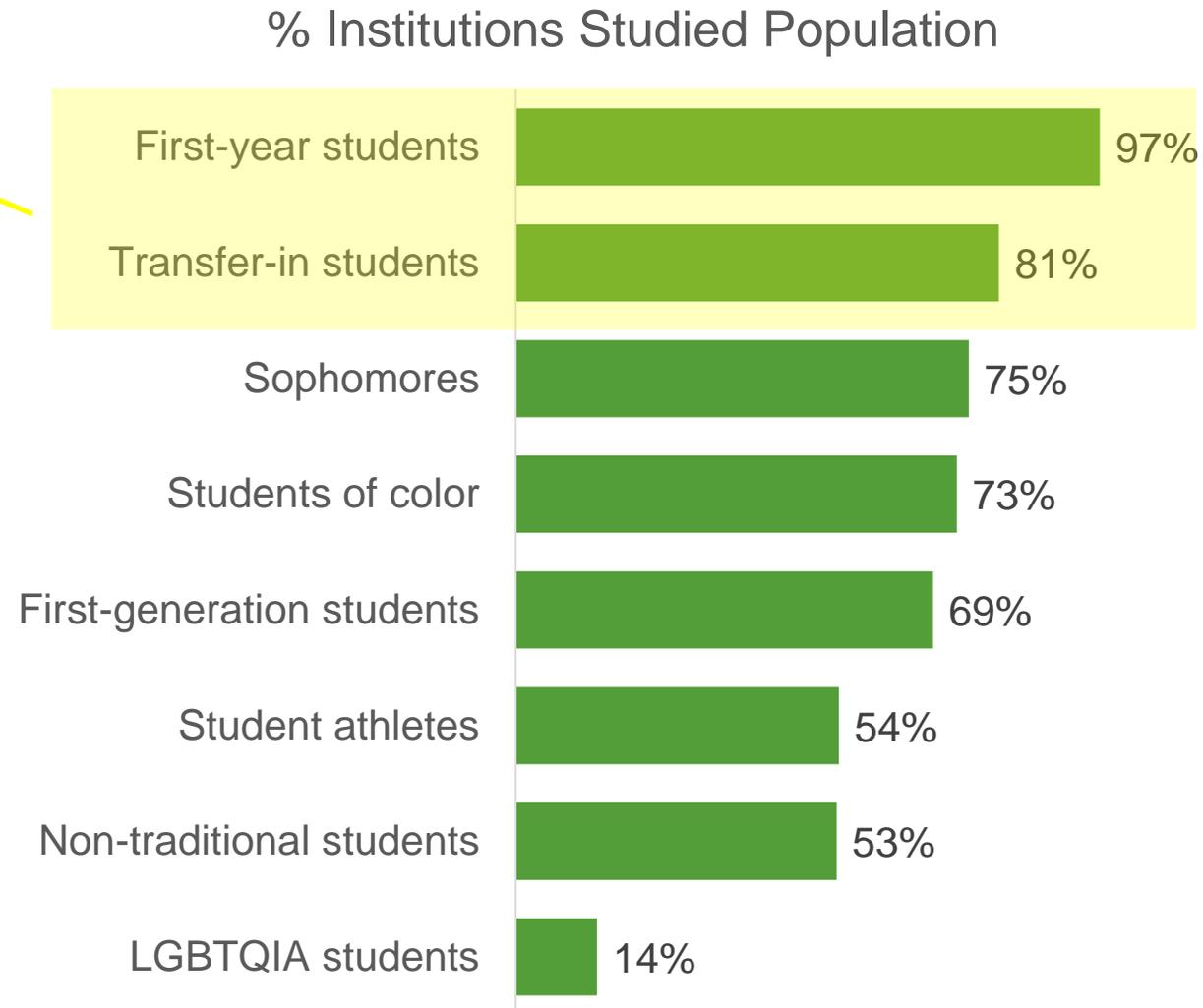
	Institution is not conducting these studies	Institution is planning to conduct these studies within the next year	Institution is conducting these studies but not annually	Institution conducts these studies annually
Career pathways and postgraduation outcomes	8%	11%	18%	63%
Student pipeline	2%	11%	32%	54%
Graduate student progress	35%	6%	17%	42%
Faculty workload and performance	21%	10%	28%	40%
Academic progress and success	6%	20%	41%	33%
Student ability to afford higher education	46%	22%	21%	11%
Efficiency of degree completion	16%	32%	42%	10%

Post-graduation outcomes and student pipeline are studied by ~80% of institutions

Ability to afford higher education is only studied by 32% of institutions

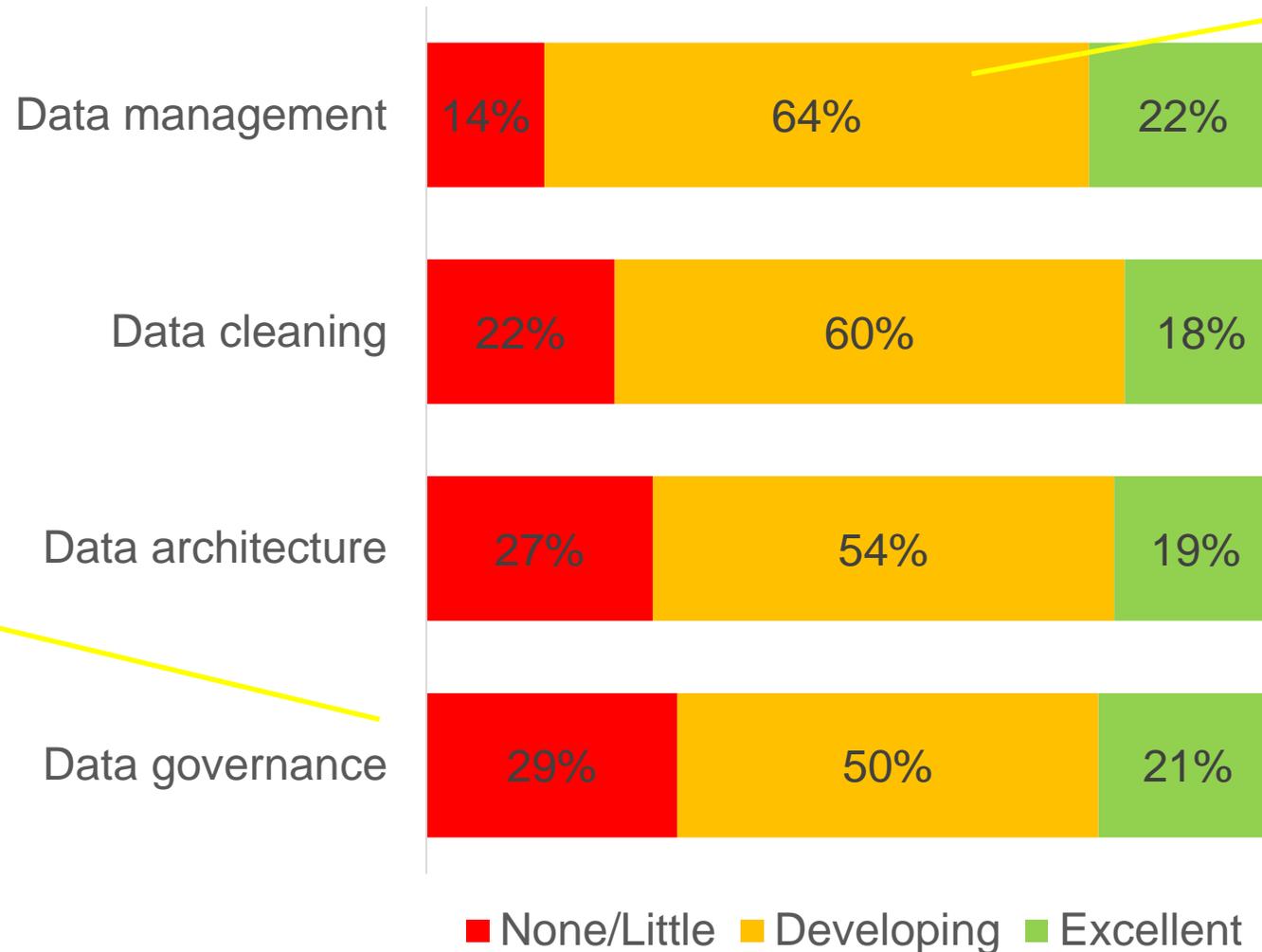
Which student populations are studied?

Students in transition are most likely to be studied



Level of Data Stewardship

Level of Institutional Data Stewardship

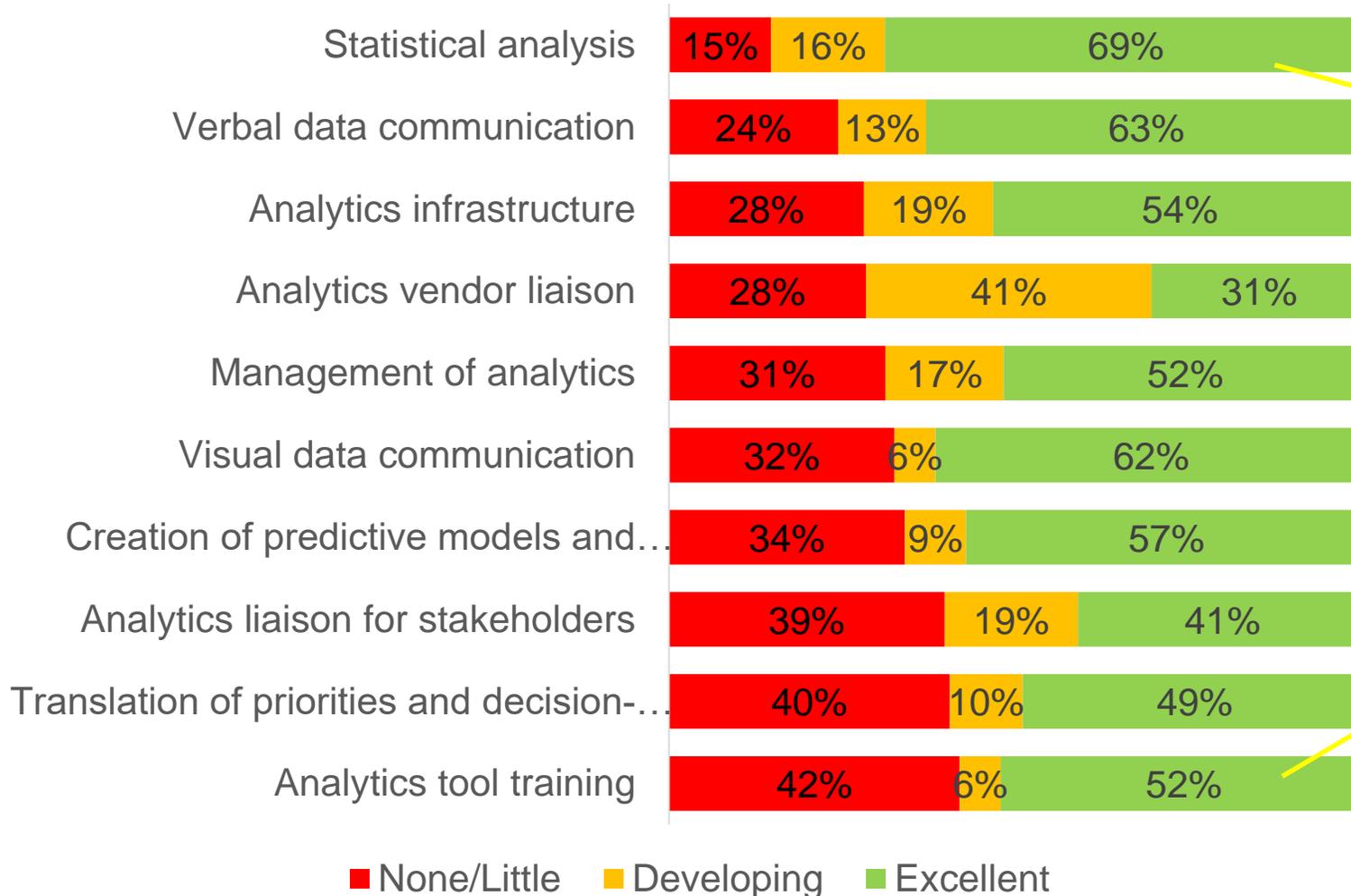


86% have excellent or developing processes to manage data

Nearly 1/3 of institutions don't have a formal data governance process

Other Staff Structures

Staff Structures

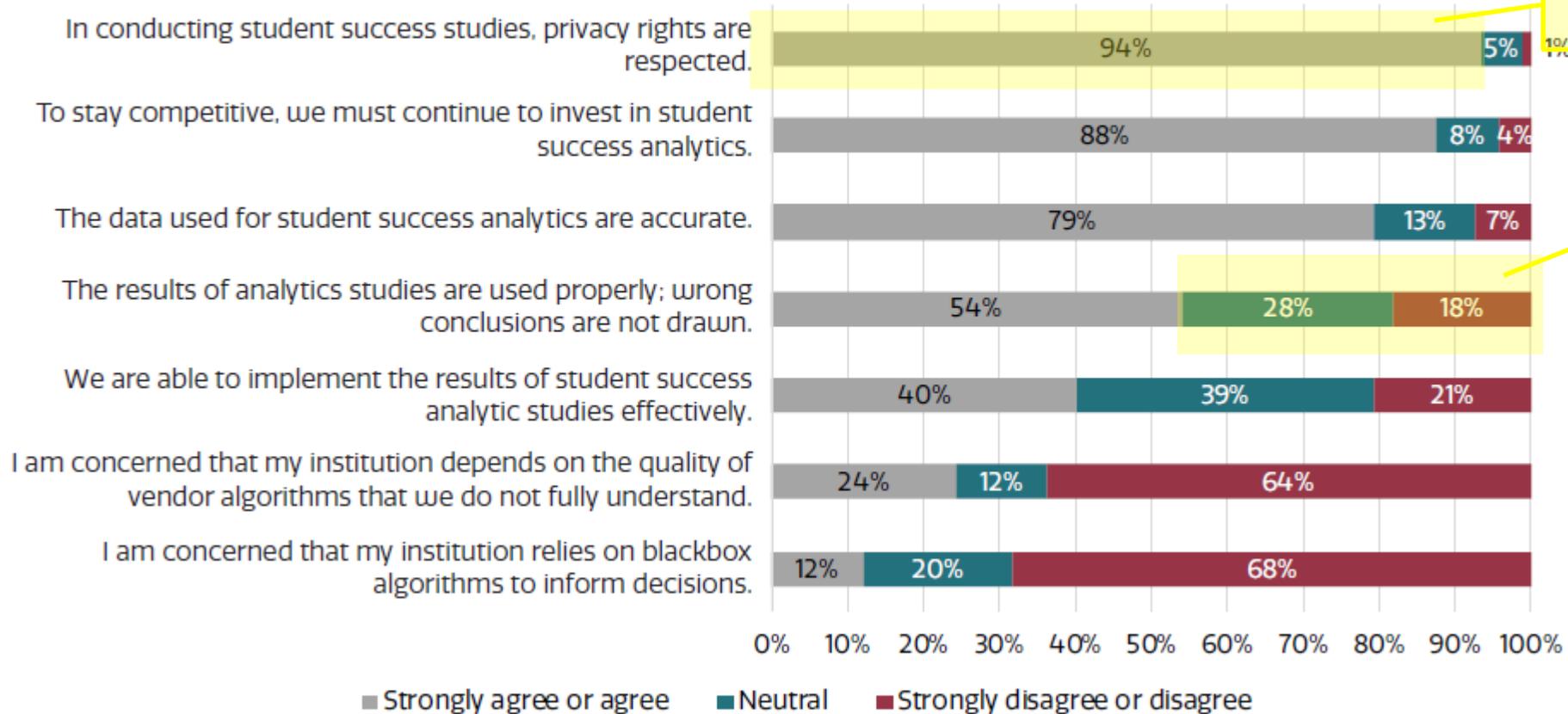


85% say their institution can conduct statistical analyses...

... but only 58% say they have adequate training on analytics tools

Perceptions of Use of Data and Analytics

Figure 6. Agreement With Statements on Data and Analytics (N = 331–432)



94% are confident that student privacy is respected

While 46% are not confident that the results are being used properly

More Staffing for Student Success Studies

Table 6. Staffing Required for Student Success Studies (N varies)

	Not in place and not needed	Not in place but is needed	Already in place, more is needed	Already in place, no more needed
Data functions	0%	20%	48%	32%
Management of analytics	0%	29%	42%	28%
Analytics and reporting	8%	35%	39%	19%

~70% of institutions say they need more staff for data, analytics, and reporting functions

Measuring Costs and Outcomes

Table 2. Percentage of Institutions That Measure Costs and Outcomes of Student Success Studies

Half+ of institutions don't measure costs. How do they know if program is valuable?

	COSTS			OUTCOMES		
	Descriptive (N = 272)	Predictive (N = 265)	Early-alert (N = 226)	Descriptive (N = 265)	Predictive (N = 254)	Early-alert (N = 223)
Never/rarely	60%	58%	49%	28%	33%	26%
Somewhat	31%	29%	39%	47%	43%	47%
To a great extent	10%	12%	12%	23%	24%	27%
Total	100%	100%	100%	100%	100%	100%

Note. Percentages may not total to 100% due to rounding.

~ 1/4 of institutions don't measure outcomes. How do they know if they're successful?

Collection, Integration, and Use of Institutional Data

Table 5. Collection, Integration, and Use of Data in Student Success Studies (N varies)

	Institution does not collect usable data	Data are collected but not integrated	Data are systematically collected and integrated	Data are systematically collected, integrated, and used
Student information system data	2%	25%	42%	31%
Institutional business	20%	48%	21%	11%
Systems-level data	28%	42%	22%	8%
Other student data	40%	39%	14%	7%

42% collect and integrate SIS data; 31% use those data

... however, much fewer use student behavioral data

Take-aways

- Most (90%) institutions invest in data analytics. Of those...
 - 96% conduct studies to improve student outcomes
 - ~25% don't measure outcomes and 50%+ don't measure costs
 - Only 7% use student behavioral data.



FLORIDA STATE
UNIVERSITY



An Existing Model: The FSU Story

Rick Burnette, PhD
Associate Vice President for Academic Affairs

Twenty Years of Student Success at FSU

- Twenty offices meeting every two weeks for twenty years
- Continuous innovation
- Very successful: 94% Retention and 68.4% 4-year Graduation
- Student Affairs Offices:

Orientation

Dean of
Students

Housing

Career
Center

CARE

Counseling
Center

Student
Health

Campus
Rec

FSU's Approach – Broad-Based and Targeted

- Broad-Based – Identified practices that affect all students and defined interventions
- Targeted – Identified population differences (CARE, Low-SES, URM, Veterans, Out-of-State students, Off-campus students)
- CARE – Joint Student and Academic Affairs program for first generation, mostly Pell-eligible students often coming from single-parent/guardian homes
- Unconquered Scholars – students who have aged out of foster care



Six Elements of a Student Success Eco-System

- A Success Team Behind Every Student
- Learning Communities
- Re-Designed Curriculum
- Experiential and Global Learning
- Leadership and Personal Development
- College to Career



Six Elements of a Student Success Eco-System

- A Success Team Behind Every Student
- Learning Communities
- Re-Designed Curriculum
- Experiential and Global Learning
- Leadership and Personal Development
- College to Career



Initial Focus

- Retention and Graduation
- Data versus Anecdote
- Used Business Intelligence
- Very collaborative
- Bucket-finding exercise

60 =

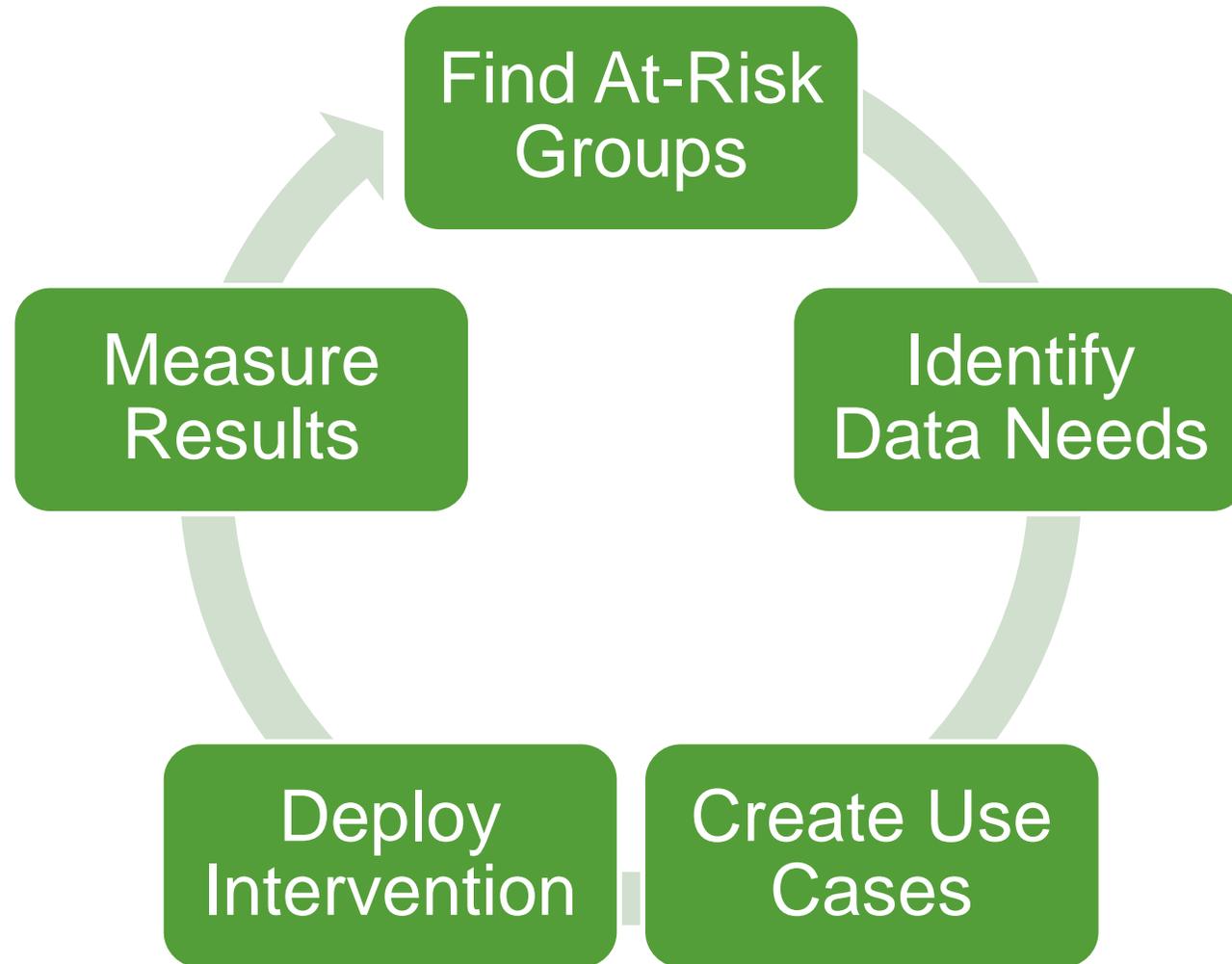
1%

6 =

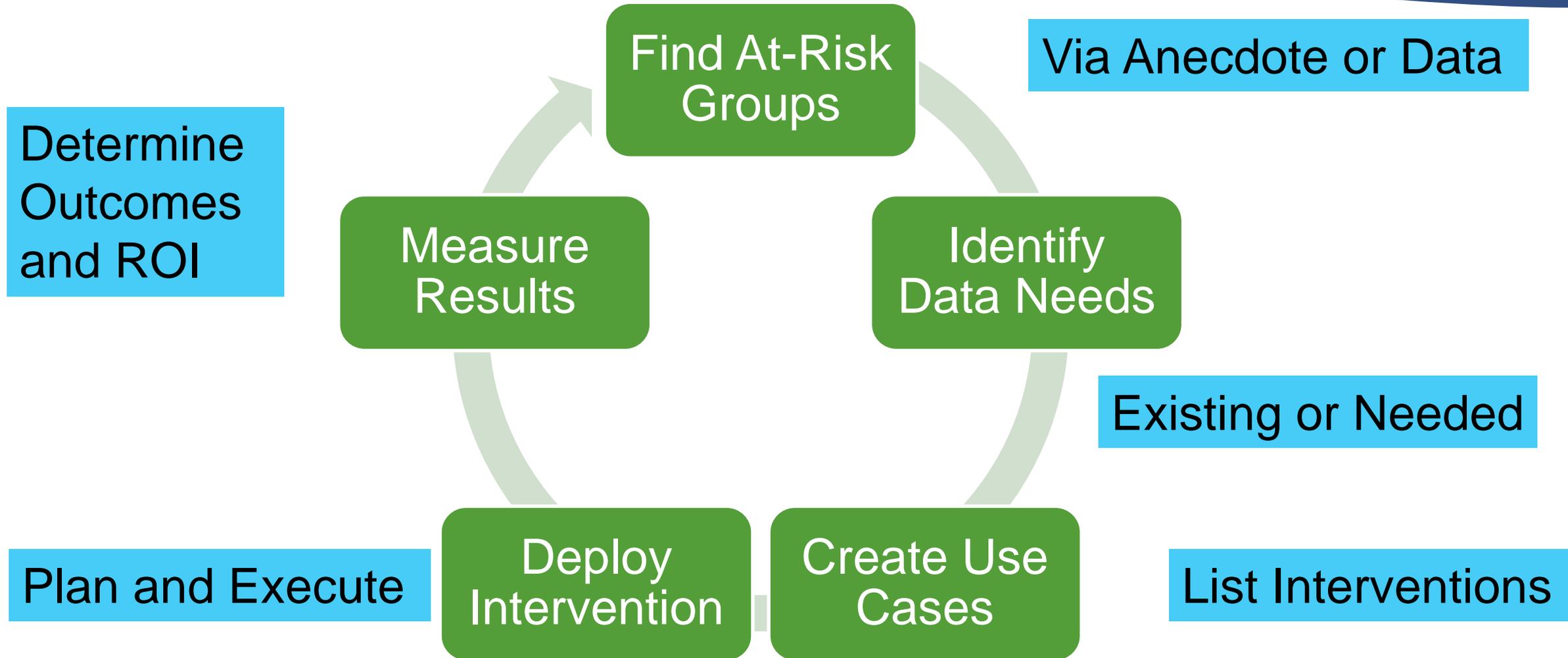
0.1%



The Insight Protocol



The Insight Protocol



Analytic Value Escalator



How do we use Different Analytic Approaches?

- Start with descriptive analyses to get a picture of the dimensions that separate different student groups – learn your data
- Business Intelligence tools allow greater ease of access to data for people who understand the context around those data
- More data usually leads to better specificity of insights
- Better analytics control for intervening variables that may mask what is really going on
- Diagnostic analytics confirm what is seen in descriptive statistics
- All units on campus should become data aware and partner with Institutional Research or the Data Science team on approaches

Descriptive Analytics – What Happened?

Data & Tools

- Geodemographic data
- SIS data, Traffic data
- Historic, Static Data
- Data warehouses
- Business Intelligence
- Dashboards
- Visualizations

Insights & Limitations

- This is a retrospective
- Assumes populations aren't changing
- Helps identify target populations
- You can visualize data trends
- Does not provide courses of action to make changes

Diagnostic Analytics – Why did it Happen?

Data & Tools

- Descriptive data
- Derived data
- Semantic and behavioral data
- Survey Data
- Cluster analytics
- Inferential statistics

Insights & Limitations

- Still viewed in hindsight
- Creating causal inferences
- Allows better interventions because of better analytics
- Creates patterns and helps to identify reasons why students deviated from the pattern
- Concrete data representations

Predictive Analytics – What will Happen?

Data & Tools

- Pattern data
- Regression analyses
- Analyses on statistically similar clusters of students
- Multivariate analyses that target these defined groups
- Forecasting and simulations
- Modeling student behavior at a macro level

Insights & Limitations

- Insights into specific groups
- Does not define the plan of action to affect future change
- Allows for interventions on a group-wise basis
- Cluster analytics approach is imprecise measure of a single student's behavior
- Factor abstractions

Prescriptive Analytics – How to make it Happen

Data & Tools

- Granular data that allows for statistical separation of individuals from groups
- Outcome modeling as is found with machine learning that approximates the best path forward
- Neural Network Modeling

Insights & Limitations

- Defines a path forward on a (near) individual basis
- Creates causal inferences for various options
- Probabilistic models are subject to historical bias
- Deterministic nature creating fair and ethical use concerns

Traditional Analytics versus Big(ger) Data

Traditional Model

- As academics, we are used to testing the null hypothesis
- The historical model is to have a theory about the outcomes before you test your data
- Descriptive data provides context for New Analytics

New Model

- Collect as much data as you can, throw it against the wall and see what sticks
- Often much more powerful than the traditional model
- Is often blind to nuance

FSU's Recent Analytics Focus – More Data

- Data Identification Group
- Engagement data – including frequency, duration and quality
- Geo-location data – and patterns therein
- Sentiment analyses – using Natural Language Processing
- HIPPA and FERPA data interrogation
- Data from Social Media and other external sources
- Identifying 100 constructs of student passion through a new inventory we have created

FSU's Recent Analytics Focus – Analytics Platform

- Creating an insight reservoir – data pond
- Allows for separation of Business Intelligence and data warehouse for operational reporting and a new environment for finding new data insights
- Deploying data science and machine learning against ever more data to begin nudging students based on individual preferences
- The entire Institutional Research office has been trained on the new insight platform

Recent Emphases in Student Success

- New focus on Post-Graduation Outcomes (PGOs) and experiences that promote successful launch are identified in FSU's Strategic Plan
- Graduating Senior Survey and Post-Graduation Survey
- Engage 100 – involving all FTICs in small structured groups
- Experiential Learning and co-curricular participation coordinated with Career Center activities
- Promoting skills like leadership and civic engagement that prepare students to be meaningful members of their communities

New Student Affairs Research Areas

- Another key element of FSU's Strategic Plan is improving student health behaviors and overall wellness
- FSU's Resilience Project – improving student resilience
- Reducing high-risk behavior
- Improving physical health
- Healthy Campus Framework – Identification and triage matrix
- Expanded mentoring opportunities for students



FLORIDA STATE
UNIVERSITY

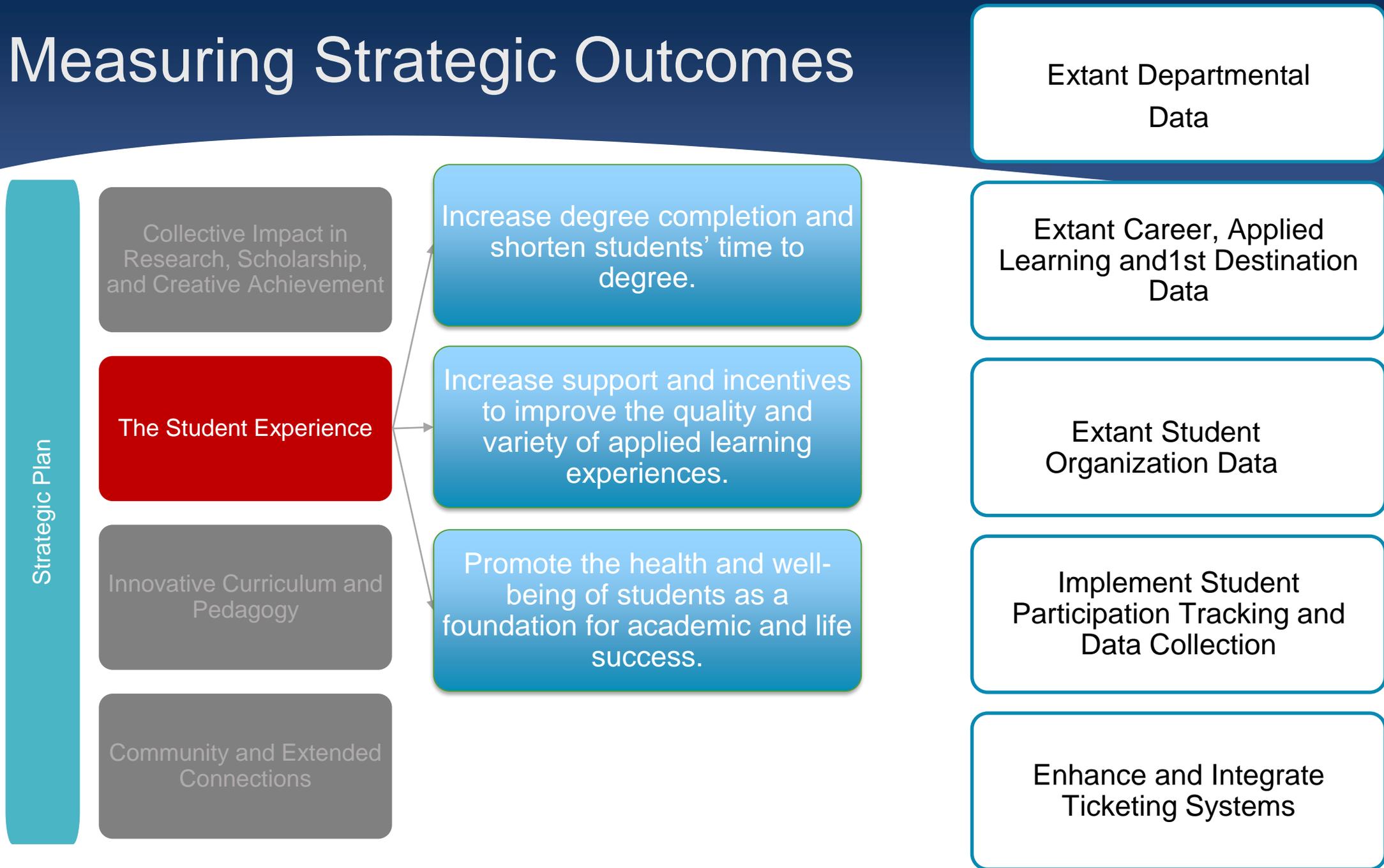


An Emerging Model: The UMBC Story

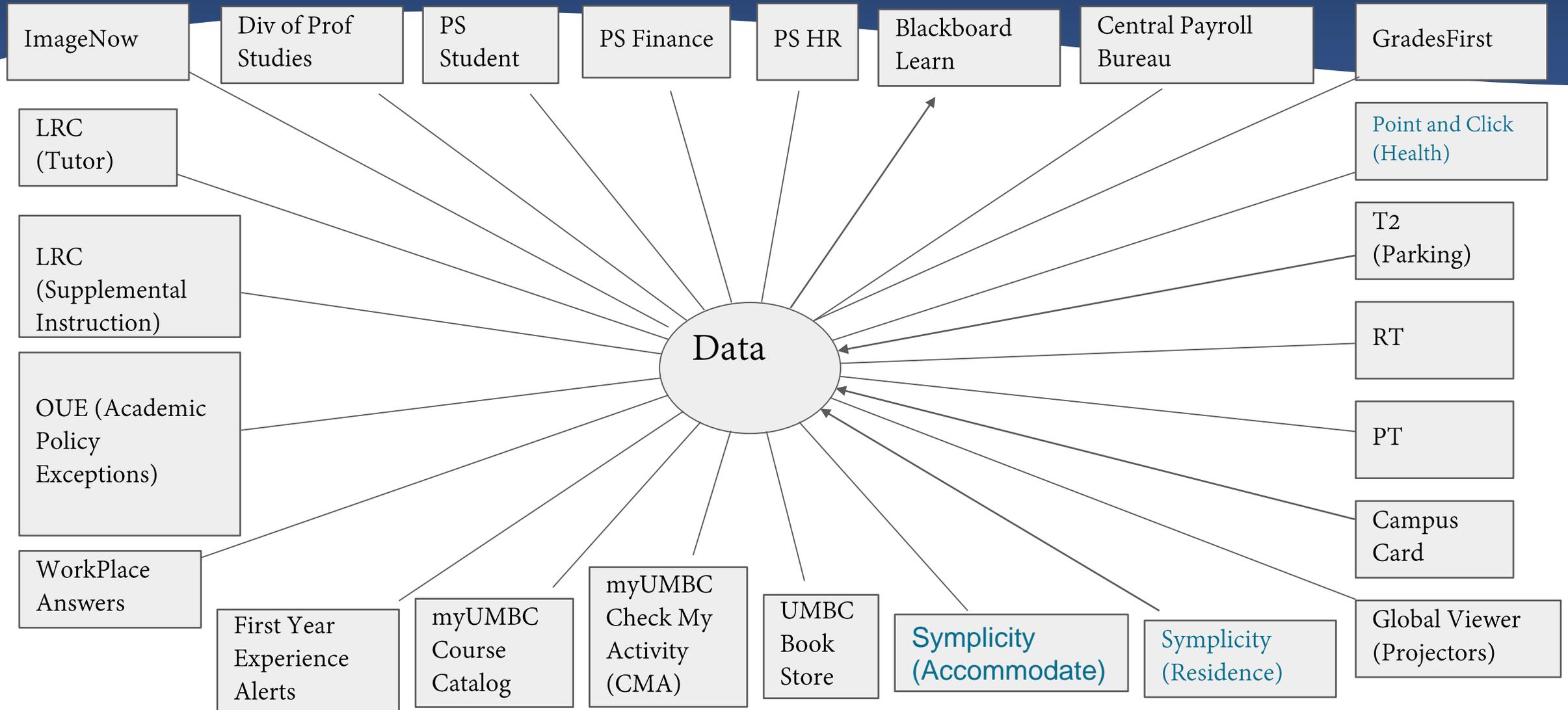
Nancy Young*
Vice President for Student Affairs

* with appreciation to Brittini Brown and Ken Schreihofer

Measuring Strategic Outcomes



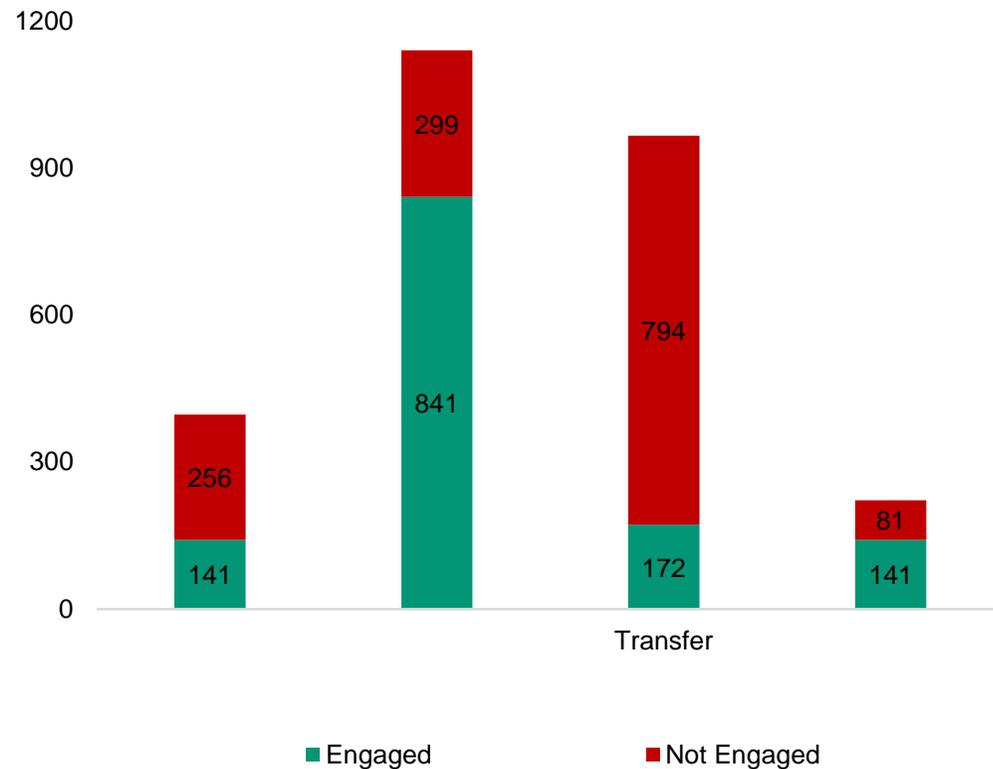
Goal 1: What's Already There?



Civitas Lift: Top 5 Engagements

1. Advising
2. Club Involvement
3. Tutoring: Writing
4. Tutoring
5. Event Attendance

From Frequencies to Descriptive Data

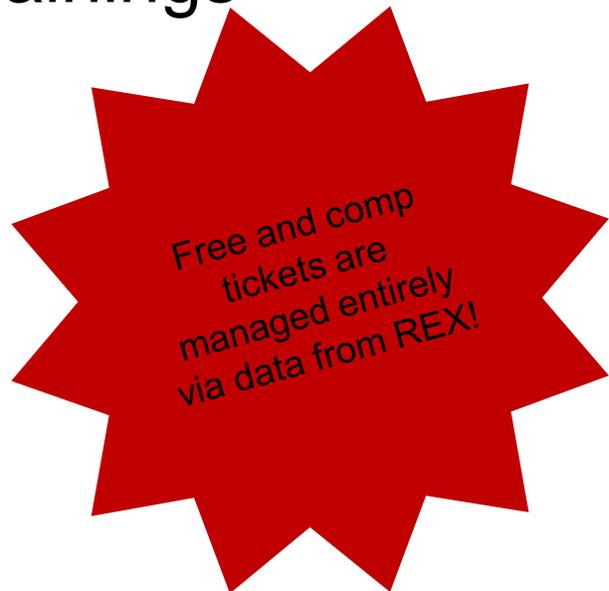


- Who are the unengaged students?
- Common characteristics?
- Are they receiving other interventions?
- How are they engaging academically?
- How can we better serve these students?

Making it Easy to Collect Data

Types of Events

- Departmental events
- Student organization events
- Leadership trainings
- Athletics
- Theater
- Service use



Required

- Support for ticketed events in myUMBC portal
- Ticketed indicator in myUMBC and UMBC Sites
- Accessible online and on demand
- Centralized
- Inexpensive and scalable
- Automated

Making it Easy to Collect Data



Qualtrics 101

Learn to use Qualtrics for developing surveys

Tuesday, November 1, 2016 - 2 PM - 3 PM
Engineering 102

The Division of Student Affairs, in collaboration with the Division of Information Technology, will be hosting a Qualtrics 101 Seminar on Tuesday, November 1, 2016 from 2:00-3:00pm in ENGR 102. Student Affairs staff who participate in this seminar will be able to build new surveys, utilize the survey library, label variables appropriately, integrate skip/branch logic, and utilize the data analytics tools within Qualtrics. This seminar is ideal for individuals who are new to Qualtrics or responsible for conducting assessment activities within the various Student Affairs departments. For more information, visit the [Qualtrics](#) website. If you have any questions, please contact Bettina Brown at bbrown@umbc.edu or at 410-455-3204. Seating is limited to the first 25 registrants.

[Add to Calendar](#)

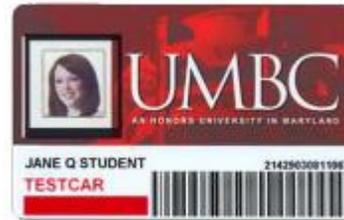
- #### Attendees (24)
- This event has ended [Download CSV](#)
- | | | |
|--|--|--|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

Participants (Pilot)

This feature is for groups that want to track participation in an event. [More info and help](#)

ONLY Uppercase, Campus ID, EMP ID, or LMS ID separated by comma or whitespace.

[Upload Participants](#)



UMBC

Men's Soccer vs. Maryland
9/26/2017 7:00 PM
Retriever Soccer Park



TZQHLX.1.1331.62
General Admission
General Admission

UMBC works

REX Connections

Incoming

-  - PS Student (+ FinAid and Student Billing)
-  - PS Finance
-  - PS HR
-  - OUE (Academic Policy Exceptions)
-  - First Year Experience Alerts
-  - LRC (Tutor)
-  - LRC (Supplemental Instruction)
-  - Global Viewer (Projectors)
-  - RT (Request Tracker)
-  - PT (Project Tracker)
-  - ImageNow
-  - myUMBC Events
-  - Pharos (Printing Kiosks)
-  - PowerLogic (Electric Meters)

Bi-directional

-  - Blackboard Learn
-  - T2 (Parking Services)
-  - Symplicity (Residence)
-  - Campus Card
-  - ARMS (Athletes)
-  - UMBCWorks (Career Center)
-  - UniversityTickets

Legend

-  - Daily
-  - Bi-weekly
-  - Quarter hour
-  - Semesterly
-  - On demand

Outgoing

-  - GradesFirst
-  - Point and Click (Health Services)
-  - UMBC Bookstore
-  - myUMBC Check My Activity (CMA)
-  - myUMBC Course Catalog
-  - Central Payroll Bureau
-  - Division of Professional Studies
-  - Visual Arts (AV equipment; card swipe)
-  - Symplicity (Advocate [Judicial])
-  - Symplicity (Accommodate)

Goal 2: Scrubbing, Structure and Reporting



Report EXchange – “REX”

REX is the reporting and decision support environment for UMBC’s data warehouse.

The UMBC data warehouse integrates data from systems throughout UMBC.

REX allows authorized faculty, staff, and institutional researchers to report and analyze University data.

Making Reporting and Decisions Easier

Student Engagement
Data

Data Warehouse

University Stakeholders

myUMBC

University Tickets

UMBC Works

Campus Card

REX

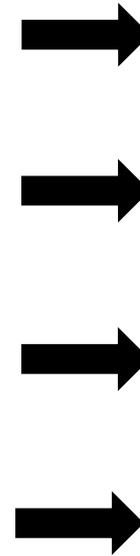
Guided Reports

Insight

Decisions

Strategic
Priorities

Student Success



Training is Critical: Assessment & Technology Planning for Events

How do I get my event posted on the homepage of myUMBC?

Tags

Separate tags with spaces. Only letters, numbers, and dashes are allowed.

How do I utilize the “Tags” feature?

TUESDAY
October 23, 2018



PARTLY CLOUDY
45.9°



How do I access more scanners?



What Makes it Work?

Embed Student Affairs
Assessment into university
student success outcomes.

Retention & Graduation

Learning Outcomes

Career & Civic

Strategic Priorities

Prioritize.
Dedicate Resources.
Build Capacity.

Manager for
Information
Technology

Assessment,
Research, and
Strategic Priorities

Contracts &
Trainers

What Makes it Work?

- Anticipating, responding to (and sometimes ignoring) barriers
 - On ponds and cleaning
 - Out skeptic the skeptics
- Dedicated resources
 - Data integrity
 - Tech support
 - Report writing
 - Technology
- Silo busting structure
- Relationships and Trust
- Training, Training, Training
- WIFM?
 - Departments
 - Gatekeepers
- Early Wins
- Strategic Show and Tell
- Start all over again



FLORIDA STATE
UNIVERSITY



Discussion Questions

Discussion Questions

- What are the unique contributions of student affairs to the persistence puzzle?
- What data are available in student affairs/activities and how can they be leveraged to improve student success insights and interventions in campus wide analytic models?
- What lessons can we learn from extant efforts to assist in the blurring of boundaries and silos within ethical frameworks?

Discussion Questions

- What roles should CIMA and CSA members play in creating a more robust and broad approach to data collection and sharing?
- How can CSA and CIMA work together to identify and use data to identify changes in student engagement?
 - to move from a macro view of students based on observable person characteristics to a model where we are beginning to drill down to individual student tendencies?
 - to identify patterns that may signal needs for intervention or engagement to assure continued enrollment?



FLORIDA STATE
UNIVERSITY



Any Further Questions?

Thank You

The Ethics of Using Student Data

Team

Use of Student Data

Acknowledgments

Use of Student Data

Why?

The University of Maryland, Baltimore County has developed a [national reputation](#) for collecting and analyzing student data to help improve the educational effectiveness of our programs and services and to support individual students with available academic resources. We've also worked with other institutions to develop [best practices in transparency about use of student data](#).

The data UMBC collects is protected under the Family Educational Rights and Privacy Act (FERPA), which allow institutions to analyze student data while also protecting its privacy. For more information, please see <http://registrar.umbc.edu/services/records>.

What?

The types of student data that UMBC collects may include:

- Information included on student applications for admission, housing, and financial aid
- Course enrollment and extracurricular activity involvement
- Use of campus academic resources (i.e. Retriever Learning Center)
- Mid-year and final course grades

How?

UMBC will collect this information through:

- Web-based platforms and systems such as Blackboard, myUMBC, Request Tracker and other campus systems.
- Handheld electronic scanners or sign-in sheets
- Selected surveys

Who?

UMBC grants student data access to employees with an "educational interest," including the following:

- Faculty
- Advisors
- Registrar's Office staff
- Student Affairs staff
- Career Center

Questions?

For questions about the use of your data, please send an email to Brittni Brown (bbrown@umbc.edu) in Student Affairs or John Fritz (fritz@umbc.edu) in Information Technology.