**UB Business Days 2024** 

Informed Decision-Making with Actionable Intelligence Dashboards

Brian O'Connor Assistant Vice President for Data Analytics Office of Institutional Analysis (OIA) Institutional Analytics Team





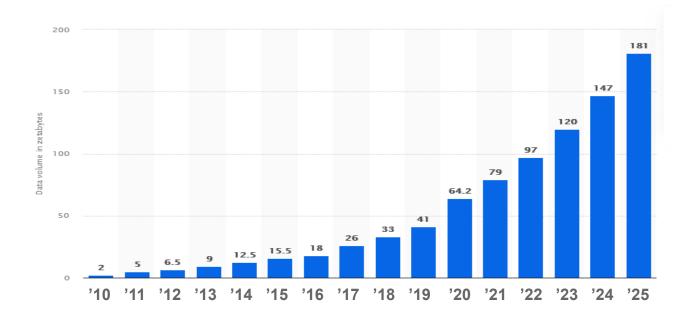


### **UB Actionable Intelligence Evolution from Silos to Collaboration**

- Actionable Intelligence → Data to Insights (What, Why, How)
- Analytics Ecosystems → Path to Actionable Intelligence
- A Joint National Call to Action on Analytics in Higher Education
- Office of Institutional Analysis (OIA) and the Analytics Team
- Culture Shift → Communication, Collaborative, Partnerships
- One Size Doesn't Fit All → Designing for Different Audiences
- Example Dashboards → Intelligence for Decision Support
- Questions?

# Drowning in Data ... Starving for information!

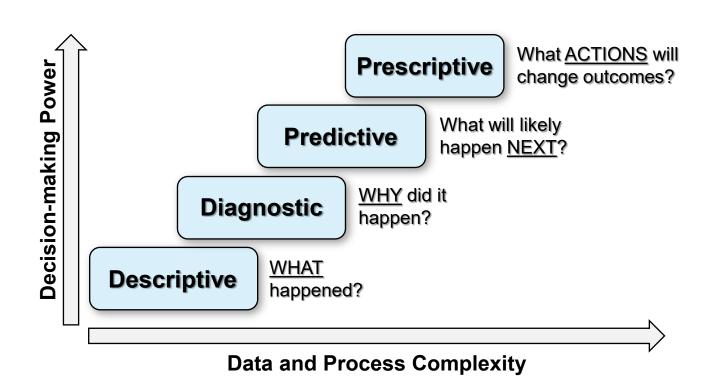
Volume of data/information created, captured, copied, and consumed worldwide from 2010-2023, with forecasts for 2024-25 (in zettabytes)



# Analytics Maturity: Shifting Culture Towards Actionable Intelligence

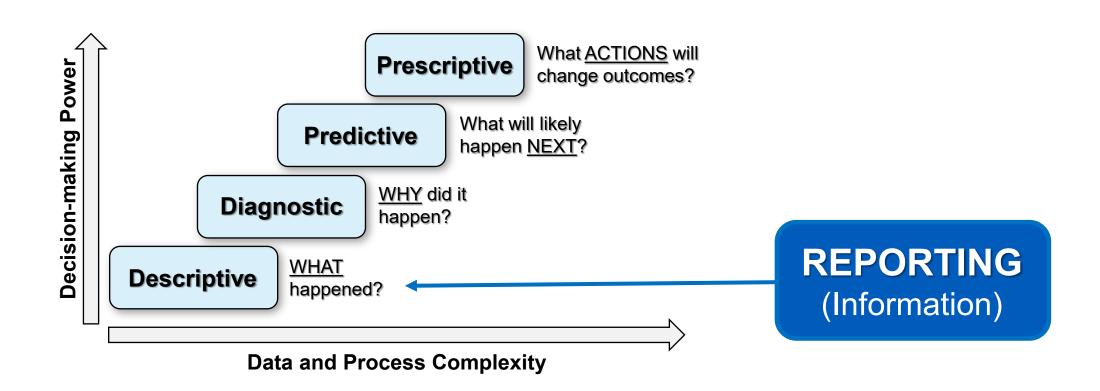


## **Shifting Culture Towards Actionable Intelligence**



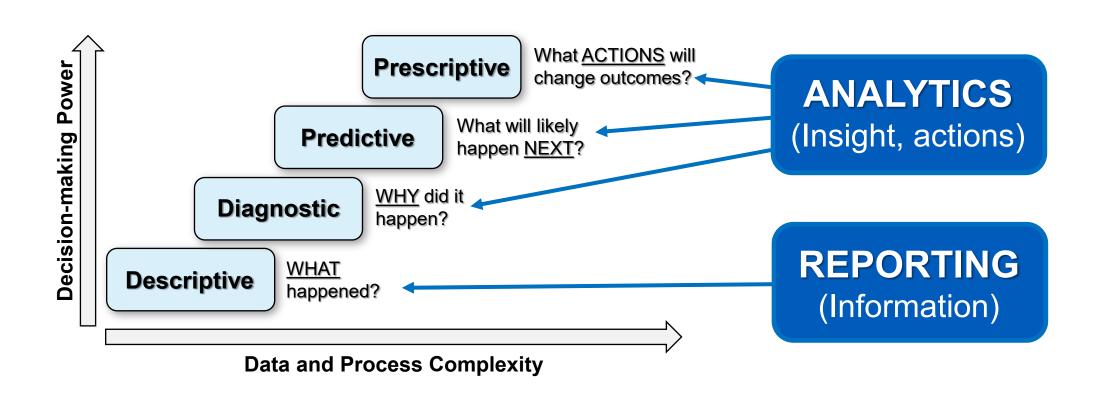


## **Shifting Culture Towards Actionable Intelligence**

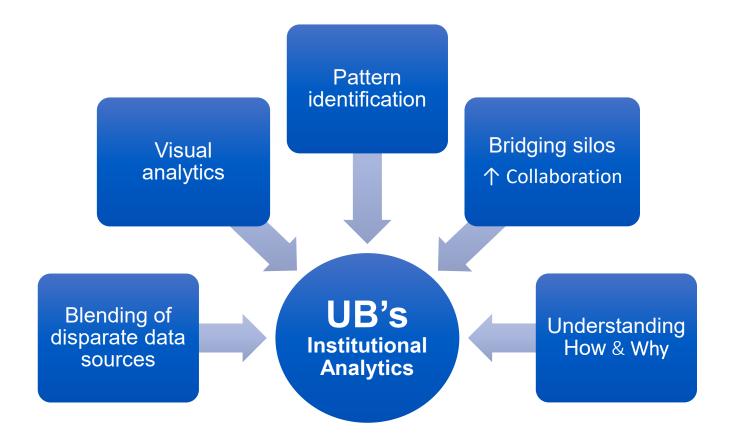




## **Shifting Culture Towards Actionable Intelligence**



## Institutional Analytics Team → Actionable Intelligence





What are we Trying to Better Understand?

Operational Processes

Institutional Priorities

**Campus Initiatives** 

What are we Trying to Better Understand?

Operational Processes

**Institutional Priorities** 

**Campus Initiatives** 

Data Transformation and Curation



Rich Disparate Sources
Raw Data Cleansing
Integrating Sources
Making Viz-Ready

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Visualizations to Tell the Data Stories

What are we Trying to Better Understand?

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Visualizations to Tell the Data Stories



Utilization → Data-Informed
Discussions and Actions

Viewing the <u>PAST</u>
Monitoring the <u>PRESENT</u>
Understanding the FUTURE

What are we Trying to Better Understand?

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All levels and functions

Promoted cross-function use

What are we Trying to Better Understand?

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State Space of the state of the

Visualizations to Tell

the Data Stories





Utilization → Data-Informed
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Viewing the <u>PAST</u>
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All levels and functions
Promoted cross-function use

Deep data dives
Trusted data sources
Discovery of new insights

What are we Trying to **Better Understand?** 

> **Operational Processes**

Institutional **Priorities** 

> Campus **Initiatives**

**Data Transformation** and Curation

**Rich Disparate Sources Raw Data Cleansing Integrating Sources Making Viz-Ready** 

**Visualizations to Tell** the Data Stories



Utilization → Data-Informed **Discussions and Actions** 

**Viewing the PAST Monitoring the PRESENT Understanding the FUTURE** 

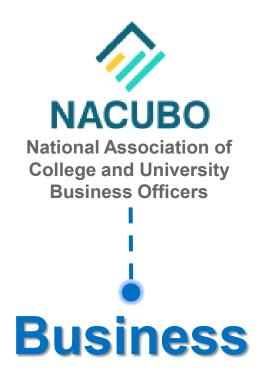
All levels and functions Promoted cross-function use

Deep data dives **Trusted data sources Discovery of new insights** 

Moving from knowing WHAT  $\stackrel{\text{\tiny theta}}{\Longrightarrow}$  understanding WHY  $\stackrel{\text{\tiny theta}}{\Longrightarrow}$  effective planning for WHAT NEXT

## National Call to Action on Analytics in Higher Education

## 2019 Joint Statement on Analytics in Higher Education







## 2019 Joint Statement on Analytics in Higher Education



Cross-functional groups delivering a uniform message: "Analytics can save higher education. Really."

## 2024 Joint Statement on Analytics in Higher Education Follow-up → "Change with Analytics Playbook"



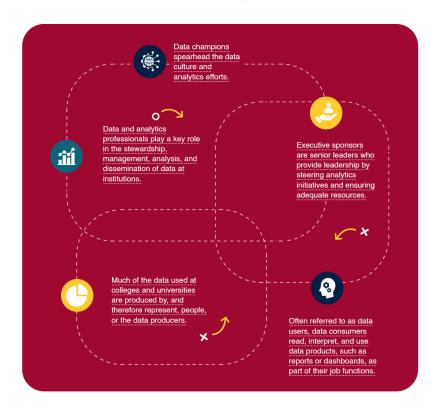
## 2024 Joint Statement on Analytics in Higher Education Follow-up → "Change with Analytics Playbook"



## People are the primary component for analytics success, not the technology

- ► Executive Sponsors (leadership, expectations)
- ▶ Data Producers (wide range, disparate sources)
- **▶ Data/Analytics Champions** (spearhead culture)
- ▶ Data Analysts (gather, integrate, analyze, share)
- ▶ Data Consumers (everyone has a "data job")
- ► **Decision Makers** (strategic, operational, pro-active leaders, front-line workers ...)

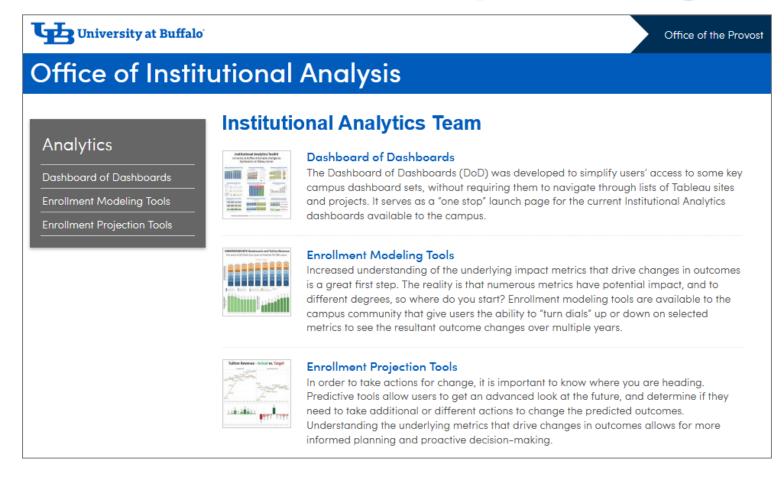
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Simply stated – just get started and stack days!



https://www.buffalo.edu/oia/institutional-analytics.html









#### **Dashboard of Dashboards**

The Dashboard of Dashboards (DoD) was developed to simplify users' access to some key campus dashboard sets, without requiring them to navigate through lists of Tableau sites and projects. It serves as a "one stop" launch page for the current Institutional Analytics dashboards available to the campus.



#### **Enrollment Modeling Tools**

Increased understanding of the underlying impact metrics that drive changes in outcomes is a great first step. The reality is that numerous metrics have potential impact, and to different degrees, so where do you start? Enrollment modeling tools are available to the campus community that give users the ability to "turn dials" up or down on selected metrics to see the resultant outcome changes over multiple years.

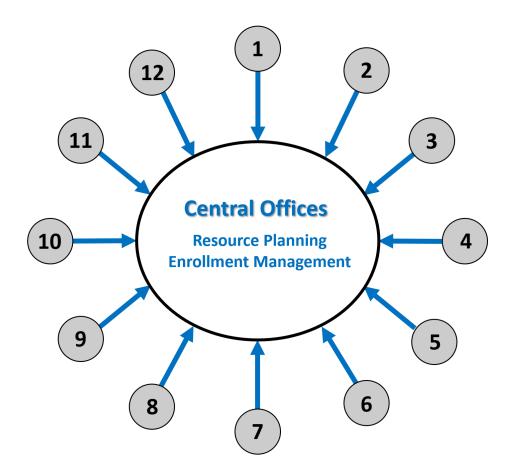


#### **Institutional Analytics Team**

- Brian O'Connor
- Mychal Ostuni
- Shannon Mahany-Kulinski
- Tiffany Fuzak

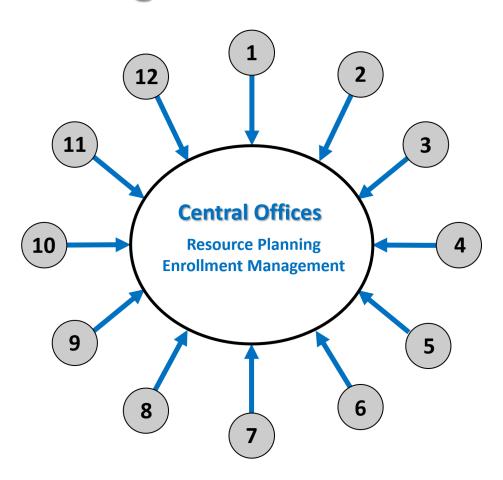
## Culture Shift → Communication, Collaborative, Partnerships

## **Changes in Data Communication and Collaboration**



Silo-based one-way communication flow

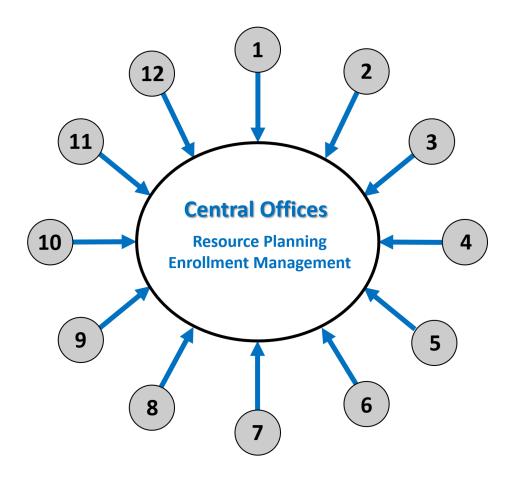
## **Changes in Data Communication and Collaboration**

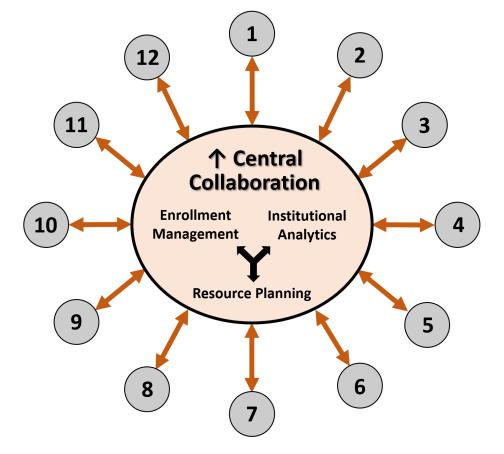




Silo-based one-way communication flow

### Changes in Data Communication and Collaboration



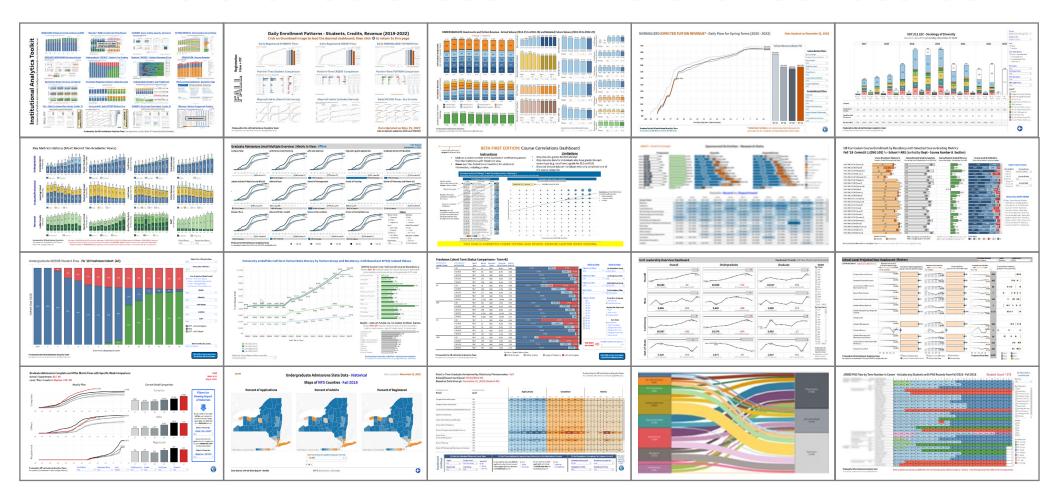


Silo-based one-way communication flow

Two-way collaborative/shared communication

# Let's look at some examples of Actionable Intelligence Dashboards

### **Different Audiences = Different Dashboards**

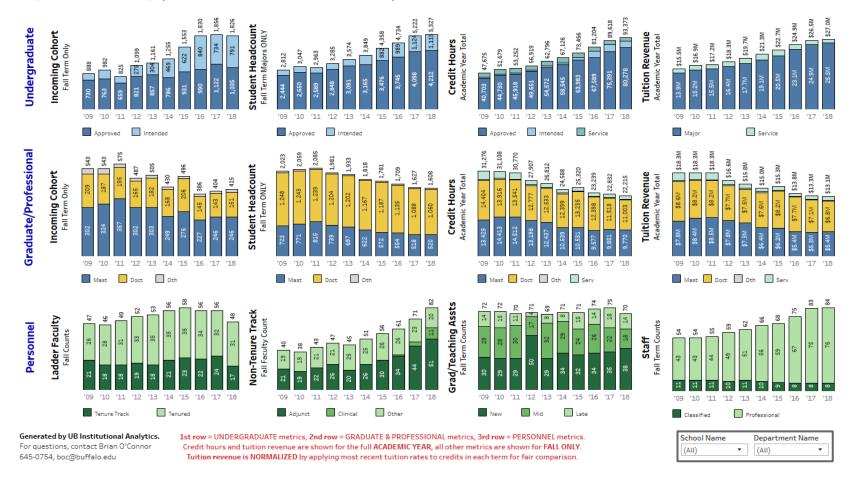


#### Different Audiences = Different Dashboards

- Administrative Summary / KPI (Small Multiples)
- What-if Scenario Testers (Informing Strategy)
- Metric Flow (In-Cycle, Multiple Years, Predictive?)
- Point-in-time Comparisons (with Caution)
- Deep Dive to How and Why (Explore/Discovery)

## **Example #1** → **Administrative Summary / KPI**

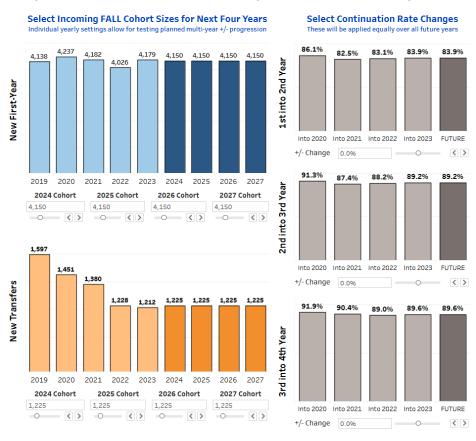
Key Metrics History (Most Recent Ten Academic Years)



## **Example #2** → What-if Scenario Testing / Planning

#### UNDERGRADUATE Headcounts - Actual Values (2019-20 to 2023-24) and Modeled Future Values (2024-25 to 2027-28)





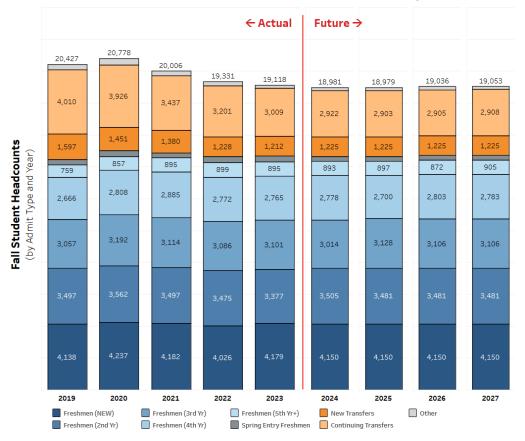
Produced by the UB Institutional Analytics Team

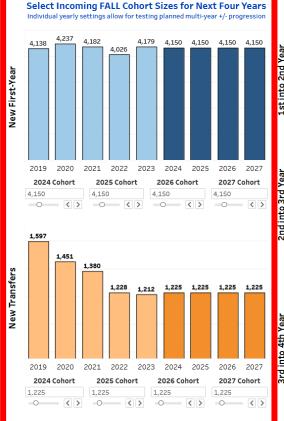
For questions, contact Brian O'Connor (645-0754, boc@buffalo.edu)

Continuation rate changes apply to

incoming first-year students only

UNDERGRADUATE Headcounts - Actual Values (2019-20 to 2023-24) and Modeled Future Values (2024-25 to 2027-28)





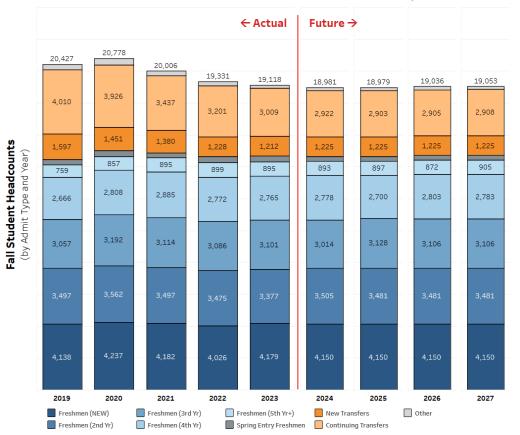


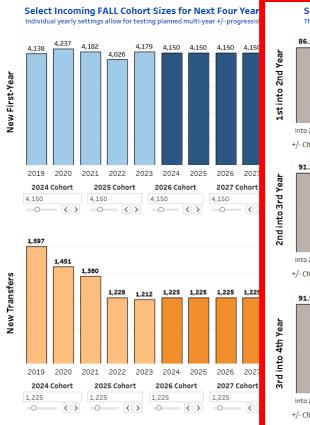
incoming first-year students only

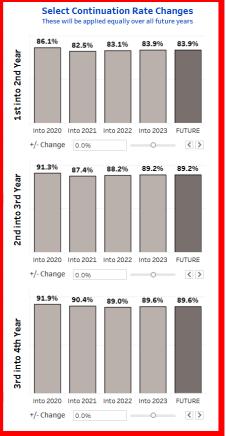
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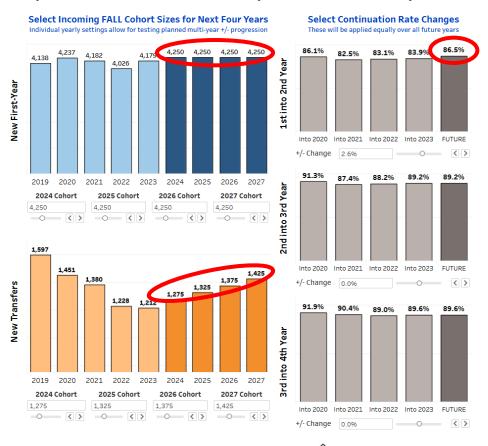
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#### **Retention Rates**

UNDERGRADUATE Headcounts - Actual Values (2019-20 to 2023-24) and Modeled Future Values (2024-25 to 2027-28)





**Produced by the UB Institutional Analytics Team** 

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Continuation rate changes apply to incoming first-year students only



Modeling UB Undergraduate Enrollments - based on Cohort Size, %OOS, Retention Rates

		Rec	ent Histo	orical Va	lues	Adjustable Model Values for What If Scenarios							
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030		
1st Year Students	Cohort Size	4,182	4,026	4,178	4,172	4,175	4,175	4,175	4,175	4,175	4,175		
	% OOS (Cohort)	9.8%	8.2%	9.9%	9.5%	9.5%	9.5%	9.5%	9.5%	9.5%	9.5%		
	Retention (Yr 1-2)	82.5%	83.1%	83.9%	84.7%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%		
	Retention (Yr 2-3)	87.4%	88.2%	89.2%	88.8%	89.0%	89.0%	89.0%	89.0%	89.0%	89.0%		
	Retention (Yr 3-4)	90.4%	89.0%	89.6%	89.0%	89.5%	89.5%	89.5%	89.5%	89.5%	89.5%		
Transfers	Cohort Size	1,380	1,227	1,213	1,234	1,225	1,225	1,225	1,225	1,225	1,225		
	% OOS (Cohort)	9.9%	7.3%	8.7%	10.2%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%		
	Total Headcount	20,006	19,331	19,118	19,122	19,079	19,191	19,250	19,241	19,242	19,242		
	NYEQ Headcount	25,200	24,088	23,788	23,959	24,091	24,387	24,432	24,422	24,423	24,423		
	NYEQ/Head	1.26	1.25	1.24	1.25	1.26	1.27	1.27	1.27	1.27	1.27		

Fall Undergraduate Headcount - Total and NYEQ for Historical (2021-24) and Future (2025-30) Based on Settings Above

Total Headcount ONYEQ Heads

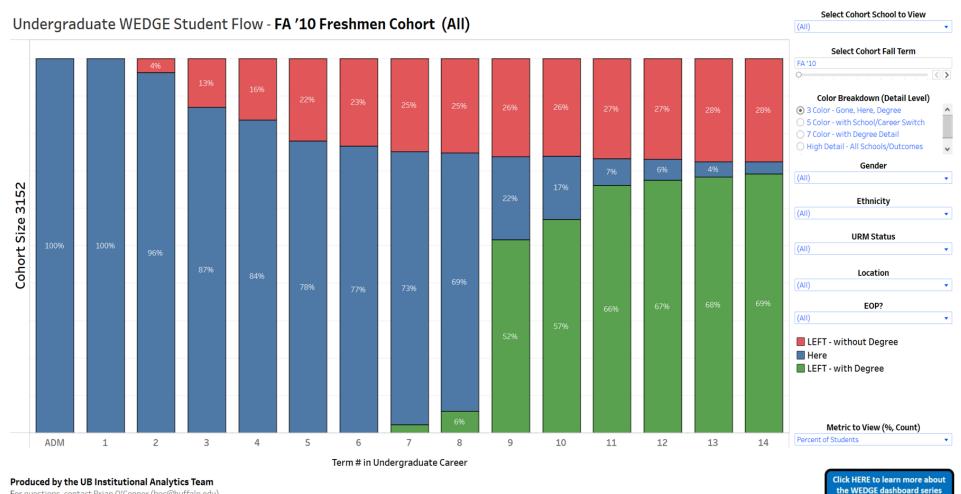
NYEQ/Head (\$ Potential)

26,000
25,000
24,000
24,000
23,000
20,000
21,000
20,000
19,331
19,118
19,122
19,079
19,191
19,250
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Integrated Data Views
Student Counts with
Associated Tuition\$

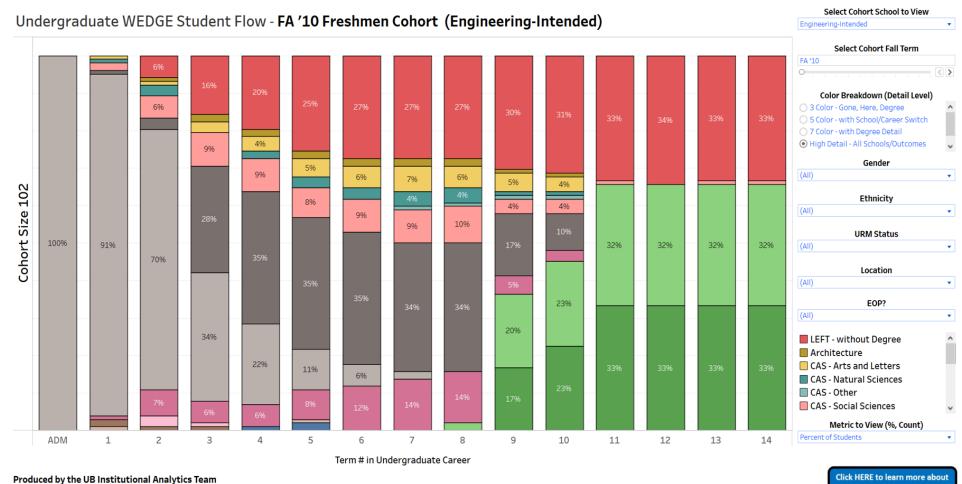
Not Limited by "High Technology" – This is and Excel-based Tool

## **Example #3** → **Metric Flow - Multiple Years (Aggregated)**



For questions, contact Brian O'Connor (boc@buffalo.edu)

### **Example #3** → **Metric Flow - Multiple Years (Aggregated)**



Informed Decision-Making with Actionable Intelligence Dashboards (Brian O'Connor)

For questions, contact Brian O'Connor (boc@buffalo.edu)

the WEDGE dashboard series

#### **Example #3** → **Metric Flow - Multiple Years (Details)**

Student Identifier	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
MM64	6	6	9	19	19	10	2	1	2	1	1	1	1	1	1	1
AM18	9	19	19	19	2	1	1	1	1	1	1	1	1	1	XX	1
AQ16	9	19	19	19	2	1	1	1	1	1	1	1	1	1	XX	1
EA94	9	19	19	19	2	1	1	1	1	1	1	1	1	1	DR	DR
JD52	9	19	19	19	2	1	1	1	1	1	1	1	1	1	DR	DR
CR49	9	19	19	19	2	1	1	1	1	1	1	1	DR	DR	DR	DR
AS88	9	19	19	19	2	1	1	1	1	1	1	DR	DR	DR	DR	DR
AR50	9	19	19	19	2	1	1	1	1	1	1	DR	DR	DR	DR	DR
KN23	12	19	19	19	2	1	1	1	1	1	1	DR	DR	DR	DR	DR
BM96	9	19	19	19	2	1	1	1	1	1	DR	DR	DR	DR	DR	DR
WF08	9	19	19	19	2	1	1	1	1	1	DR	DR	DR	DR	DR	DR
JW34	9	19	19	19	2	1	1	1	1	1	DR	DR	DR	DR	DR	DR
S092	9	19	19	19	2	1	1	1	1	1	DR	DR	DR	DR	DR	DR
ZX49	9	19	19	19	2	1	1	1	1	1	DR	DR	DR	DR	DR	DR
VV91	9	19	19	19	19	17	2	1	MA							
SG14	9	19	19	19	2	1	1	MA								
JC15	9	19	19	19	2	1	MA									
CN41	9	19	19	19	2	1	MA									
T063	9	19	19	19	2	1	XX									
KP01	9	19	19	19	2	1	XX									
GH43	9	19	19	19	2	1	XX									
DC86	9	19	2	MA												

■ Doctoral Degree

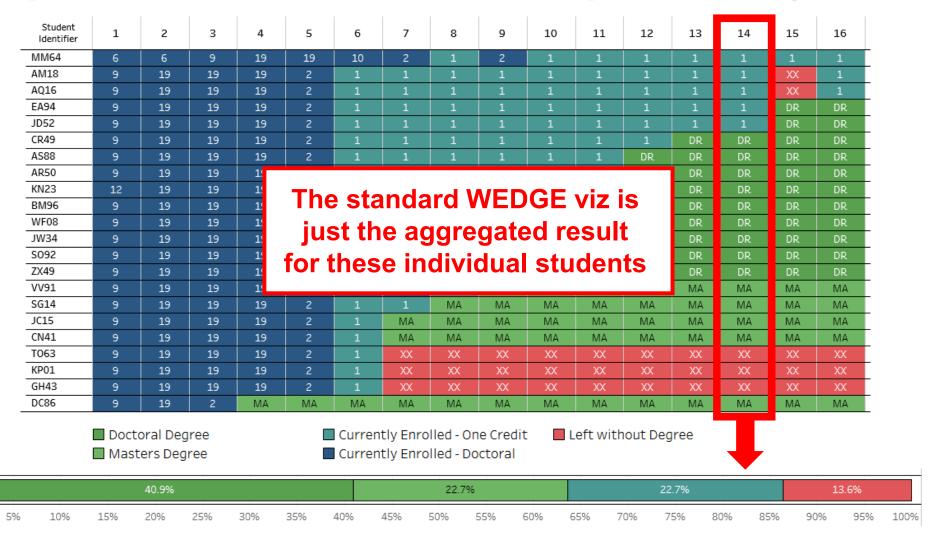
Currently Enrolled - One Credit

■ Left without Degree

■ Masters Degree

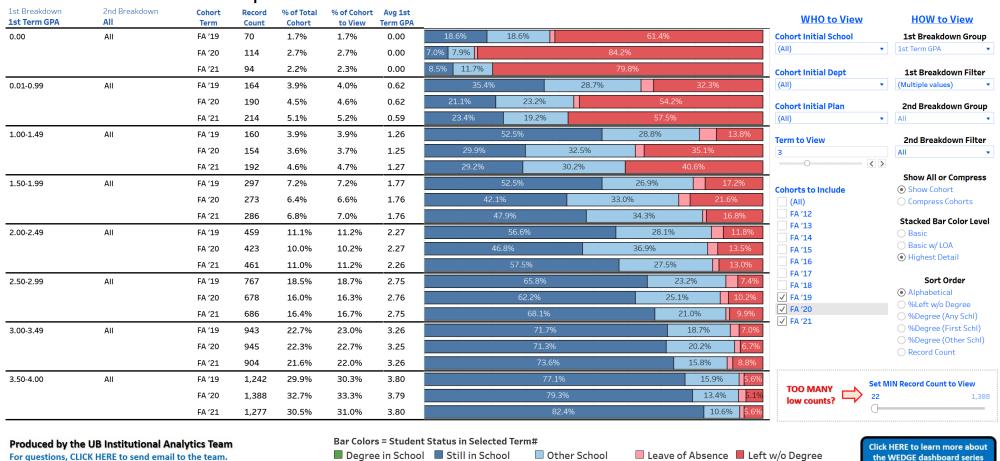
Currently Enrolled - Doctoral

#### **Example #3** → **Metric Flow - Multiple Years (Details)**



#### **Example #3** → **Metric Flow - Multiple Years (Discovery)**

#### Freshmen Cohort Term Status Comparisons - Term #3

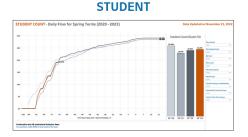


#### **Example #4** → In-Cycle Metric Flow / Integrated Data

Daily Enrollment Patterns - Students, Credits, Revenue (2020 - 2023)

Click on thumbnail image to load the desired dashboard, then click 🚭 to return to this page

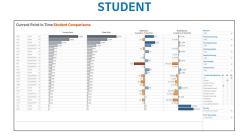
Registration Flow Daily



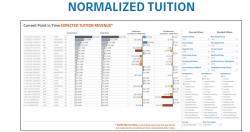




Comparison
Point-in-Time







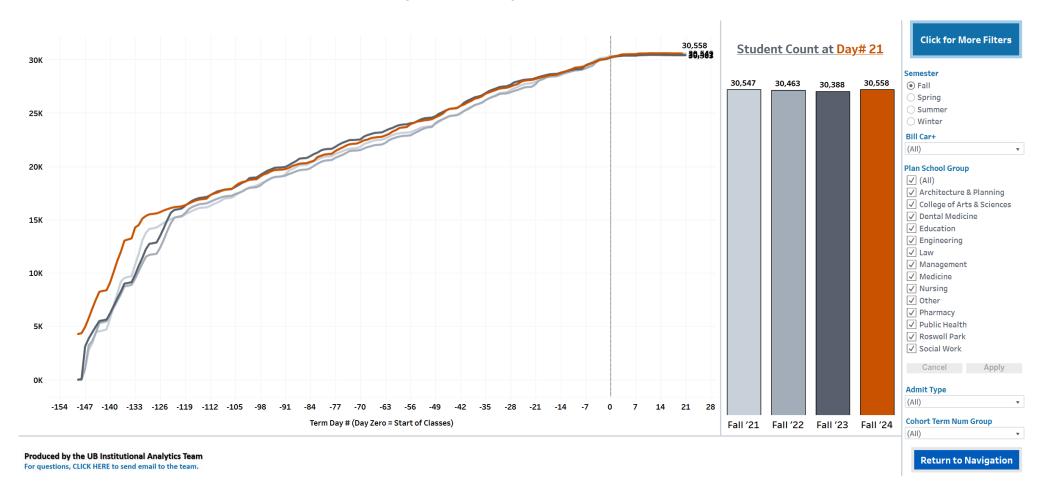
Produced by the UB Institutional Analytics Team For questions, CLICK HERE to send email to the team.

Data Updated on September 18, 2023

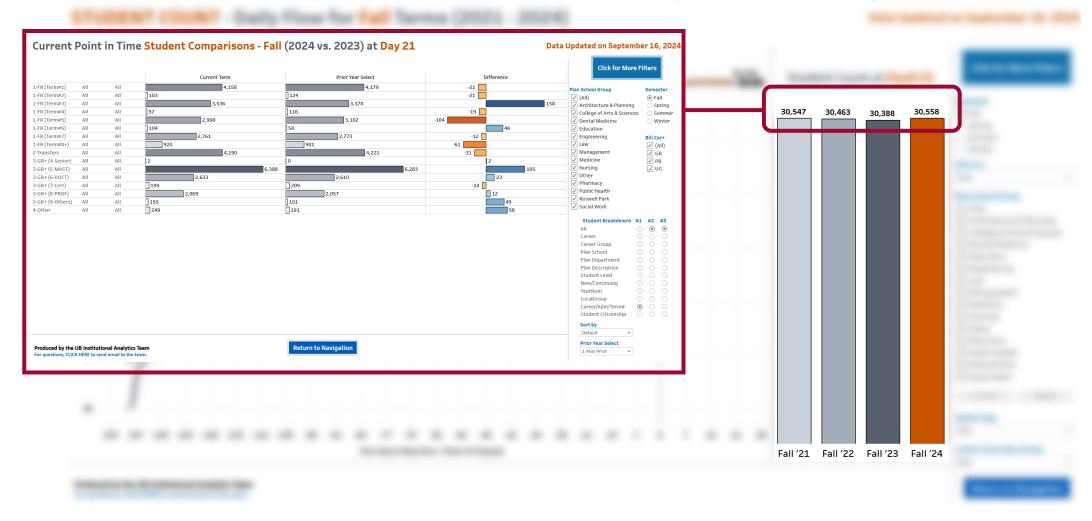
#### **Example #4** → In-Cycle Metric Flow / Integrated Data

**STUDENT COUNT** - Daily Flow for Fall Terms (2021 - 2024)

Data Updated on September 16, 2024



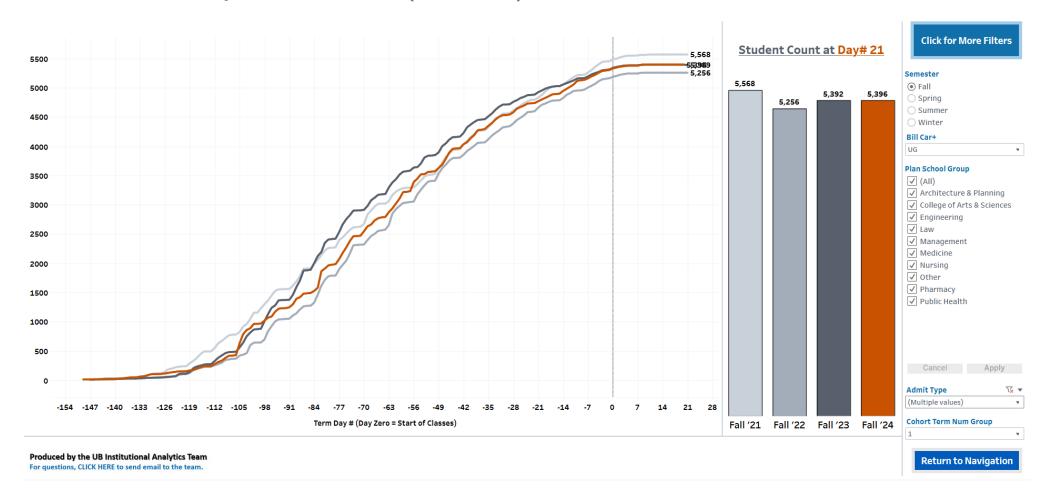
#### **Example #4** → Point-in-time Comparisons (with caution)



#### **Example #4** → In-Cycle Metric Flow / Integrated Data

**STUDENT COUNT - Daily Flow for Fall Terms (2021 - 2024)** 

Data Updated on September 16, 2024



#### **Example #5** → **Deep Dive to Explore & Discover**

Percent of Total

Fall - Student Headcounts (based on data through October 17, 2023)

Breakdown in View: Level - Career Hover here for more information about this breakdown.

Values

#### 30,439 30,523 30,452 30,381 30,078 6.8% 6.8% 29,543 28,796 2,109 2,063 28,443 2,059 28,119 2,043 2,020 1,957 1.979 25.2% 25.0% 26.4% 25.3% 25.4% 29.6% 8,476 66.7% 67.7% 67.9% 68.3% 19,485 20,010 20,427 20,006 63.5% 19,331 19,118 18,355 18,579 18,980 2014-15 2015-16 2016-17 2017-18 2018-19 2019-20 2020-21 2021-22 2022-23 2023-24 2014-15 2015-16 2016-17 2017-18 2018-19 2019-20 2020-21 2021-22 2022-23 2023-24

 $\times$  \*NOTE\* The underlying dataset recently underwent intensive optimization to improve data insights. As a result, you may notice minor variations in headcounts within breakdowns compared with any snapshots taken prior to 9/15/2023.

Color Legend

GR GR PR

Adm - UG Admit Type BioDemo - Citizenship BioDemo - Ethnicity BioDemo - Gender Credits - Credit Hour Groupings

GPA - Academic Standing GPA - Cumulative GPA (0.5 bins) O GPA - Term GPA (0.5 bins)

Go to Heads-Creds-Rev Tool

More Information

Color Breakdown Adm - Entry Term Type

○ Level Level - Career

Level - Early/Mid/Late

 Location - At Admission O Location - IS/OS

Location - Residency

O Plan - School O Plan - Department

O Plan - Description

O Plan - Subplan

Plan - Approved/Intended

O Plan - Has Minor Revenue - Tuition Group

Student - Funding

 Student - Higher Ed History O Student - Online Status

O Term Num

O Term Num - with Summer Entry

O Visa

O Visa - Group

Quick Filters (Hover here for more info)

✓ Graduate ✓ Professional Spring

✓ Undergraduate

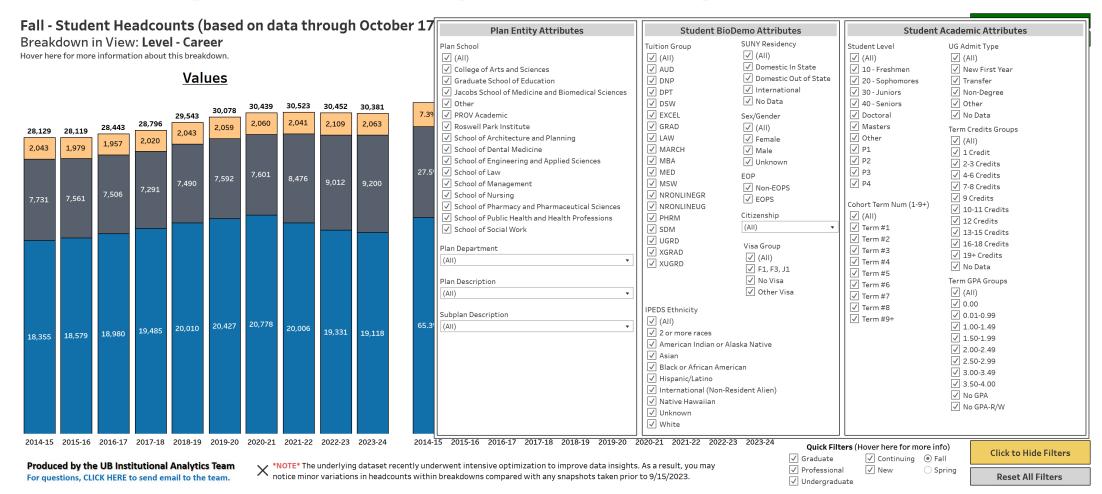
**Click for More Filters** 

Reset All Filters

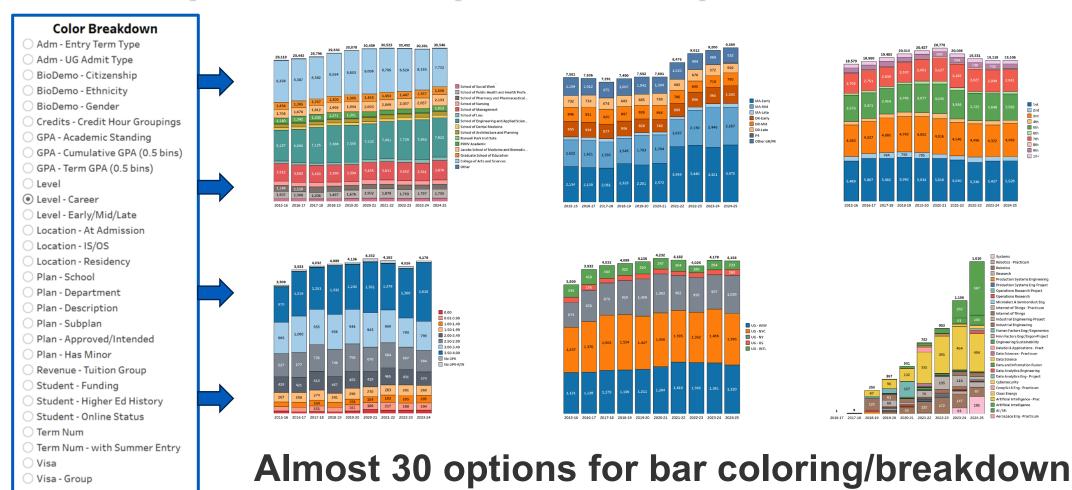
Produced by the UB Institutional Analytics Team

For questions, CLICK HERE to send email to the team.

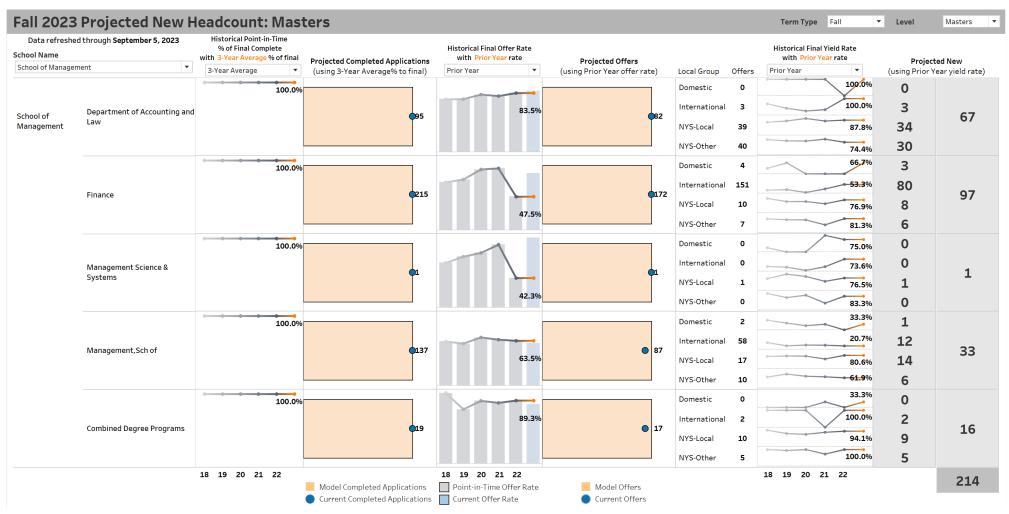
#### **Example #5** → **Deep Dive to Explore & Discover**



#### **Example #5** → **Deep Dive to Explore & Discover**



### **Example #5** → **Deep Dive Models ("Glass Box")**



# Thanks for coming!

How did I do? Please take the Session Survey on your smart device using the QR Code on your schedule.