

LEVERAGING DATA ANALYTICS TO IMPROVE UNIVERSITY OPERATIONS

LEADERSHIP DASHBOARD PROJECT KICKOFF EVENT CARNEGIE MELLON UNIVERSITY JULY 26, 2022

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Overview

How Stony Brook University uses dashboards

Stony Brook's organization and data environments

Lessons learned





How Stony Brook uses dashboards to improve university operations



Stony Brook University Profile

26,608 Fall 2021 headcount enrollment	1340 Avg SAT 2021 Incoming Freshmen (test optional)	94 Avg HS GPA 2021 Incoming Freshmen
68% 32% Graduate	1/3 Receive Pell Grants	33% 20% White URM
15,365 Fall 2021 employees including hospital	2,866 Fall 2021Faculty full-time & part-time	#93 U.S. News & World Report Rank 2022
3.8 Billion USD Annual Budget	1957 Founded	2001 Joined AAU
FAR BEYOND		







THE FOLLOWING DASHBOARDS **ARE ASSOCIATED** WITH OPERATIONAL IMPROVEMENTS. **THE DASHBOARDS DID NOT CAUSE THE IMPROVEMENTS** BUT RATHER PEOPLE MADE THE IMPROVEMENTS.

INFORMATION FROM AN ANALYTICS SYSTEM ENABLES CHANGE BUT REQUIRES ACTION







Selected Undergraduate Success Dashboards

"Hover for details and notes

Average

90.5

90.1

90.0

90.8

91.3

91.2

91.8

92.5

92.8

92.9

93.1

93.3

93.5

93.4

93.9

94.4

Average

1178

1179

1177

1194

1209

1223

1228

1244

1243

1253

1254

1303

1323

1328

1322

1339

HS GPA SAT Score

Full-Time, First-Time Data Table Major Comparisons Demographic Comparisons Metrics Metrics by College

Full-Time, First-Time (FTFT) Four-Year Graduation Rates by Initial Major - Fall Cohorts

3raduation rates by initial major can exhibit volatility because of low numbers of students; they are also strongly related to the academic profile of entrants as well as major changes. Data could be nterpreted with caution. 4-year graduation rate data for the two most recent cohorts are preliminary until reported to IPEDS; values may increase slightly during this time. Note: The fall 2020 cohort includes 106 "Study Abroad at Home" students who are not counted in official fall headcount enrollment, but are con ed part of the entering cohort



Retention Rates





Office of Institutional Research, Planning & Effectiveness, I. Source: IRPE FTET Cohort Graduation Rate Panels, I. Data undated: 4/21/2022 4:59:39 PM

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Dashboard Filters

Full-Time, First-Time - First Term Metrics

Bashboara rinters							
Entering Fall	Initial College/School	Initital Major	Tutition Residency	IPEDS Ethnicity	Gender	Student Groups	
(All) •	(All) 🔻	(All) 🔻	(All) 🔻	(All) •	(All) 🔻	All 🔹	



07 11 15 15 17 17 17 21 21 07 11 15 15 17 17 21 21 21



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First-time, full-time 4-year graduation rates have increased 18 percentage points in the last seven years





Publicly Available Campus Energy Consumption Dashboards







Office of Institutional Research, Planning & Effectiveness and Office of Administration & Finance | Data Source: Office of Energy Management

	Space Usage: Laboratory	Ear	th and Space Energy Use Inter 134 kBtu/		Fiscal Year Annual 21,331,818 i		
Report Selector	Total Energy (kBtu) for the Building: Earth and Space	e past 6 weeks ce Sciences					Hover for Notes
Energy Consumption	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Energy Calendar Dashboard Filters Beilding Earth and Space Sciences				June 15, 2022 47,161.7	June 16, 2022 43,485.3	June 17, 2022 63,894.5	June 18, 2022 27,323.6
Energy Type Total Energy Energy Measure Total Energy	June 19, 2022 27,181.1	June 20, 2022 39,335.0	June 21, 2022 42,568.2	June 22, 2022 34,043.5	June 23, 2022 42,181.7	June 24, 2022 46,203.2	June 25, 2022 41,493.9
	June 26, 2022 46,596.2	June 27, 2022 74,001.8	June 28, 2022 43,041.0	June 29, 2022 49,730.6	June 30, 2022 53,632.2	July 1, 2022 80,855.5	July 2, 2022 59,806.0
	July 3, 2022 45,061.7	July 4, 2022 50,096.3	July 5, 2022 60,688.2	July 6, 2022 72,567.2	July 7, 2022 56,787.2	July 8, 2022 60,304.4	July 9, 2022 39,575.9
	July 10, 2022 34,752.7	July 11, 2022 52,182.3	July 12, 2022 74,721.8	July 13, 2022 69,972.4	July 14, 2022 70,396.1		

Office of Institutional Research, Planning & Effectiveness and Office of Administration & Finance | Data Source: Office of Energy Manageme



finstitutional Research, Planning & Effectiveness and Office of Administration & Finance | Data Source: Office of Energy Manage



Energy consumption and carbon emissions have decreased; new energy savings identified



reduction in energy use intensity

Target = 23% by 2030

HVAC optimization across 35 buildings over 2021-22 Thanksgiving, and late Dec./Jan. holiday weekends resulted in a savings of 158,000 kWh in electrical energy and 2,938 MMBtu in thermal energy

Holiday Savings

The energy savings achieved by SBU are equivalent to:

36.81% reduction in Scope 1 and Scope 2 greenhouse gas

emissions.

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Target = 40% by 2030





Financial dashboards allow unit and institutional leaders to see current data, trends, and budget to actuals

All Funds Current All Funds Trend Budget to Actuals All Funds Details Hover for Details and Notes All Funds Operating Dashboard Summary [Area name removed] GL Account Fund Desc Business Unit Division Desc Dean Desc (AII) (AII) [Area name removed] • (AII) (AII) \$5.636.519 \$221,485 \$1,817,088 \$7.675.092 Allocation Expense Encumbrance Balance Allocation, Expense, Encumbrance and Balance Period: Jun 22 School Desc Allocation Balance Dean Desc Expense Encumbrance Grand Total \$7.675.092 \$5,636,519 \$221,485 \$1,817,088 VP for Human Human Resource Services \$6.353.832 \$4.888.626 \$209,645 \$1,255,561 Resources Labor Relations \$830,308 \$562,223 \$7,719 \$260,365 Healthier L \$102,420 \$103.139 \$2.371 (\$3.090) EAP \$388.532 \$82,530 \$1.750 \$304.252 Choose Value Period Trend, Period over Period

All Funds Current All Funds Trend	Budget to Actuals	All Funds Detail
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All Funds Operating [Area Name Removed				Hover for Details and Notes 🕢
Division Desc	Dean Desc	GL Account	Fund Desc	Business Unit
[Area name removed] *	(All)	 (All) 	▼ (AII)	• (All) •

Budget Year Trend by School/Divison, Current Year over Prior Years

				Budget Year		
School Desc		2018	2019	2020	2021	2022
[Area name removed]	Allocation	\$5,625,738	\$6,136,276	\$7,861,352	\$5,889,498	\$7,675,092
removeuj	Expense	\$5,167,648	\$5,620,341	\$5,930,538	\$5,352,376	\$5,636,519
	Encumbrance	\$0	\$0	\$0	\$0	\$221,485
	Balance	\$458,090	\$515,935	\$1,930,814	\$537,122	\$1,817,088



vision Desc	Dean Desc		Parent Org Desc		GL Account D	esc (g	Fund Cod	e	Business	Jnit Desc
rea name removed] •	(All)	٠	(AII)	•	(AII)	*	(All)		(All)	,
udget to Actua ean: All Paren	Is as of Jun 22 Org: All \$5,636	510	(73%)						\$7,675	002
500K 1000K	1500K 2000K 2500	K 300	00K 3500K 4000k	450	00K 5000K 55	500K 600	OK 6500k	7000K 7	500K 8000K	8500K
ean: All Paren	ve = 1/12 of total bud		h as of Jun 22							
ean: All Paren	Org: All		h as of Jun 22		\$0.58N (91%)				Monthly Bud	get: \$0.64
lean: All Paren Monthly budget val 600K 500K	:Org: All <i>ie</i> = 1/12 of total bud \$0.60M (93%)		\$0.45M (71%)					\$0.46M (73%)	Monthly Bud \$0.48M (75%)	get \$0.64
ean: All Paren Ionthly budget val	Org: All ue = 1/12 of total bud \$0.60M		\$0.45M			\$0.40	M i		\$0.48M	\$0.43
ean: All Paren Ionthly budget val 600K 500K 500K 500K	:Org: All re = 1/12 of total bud \$0.60M (93%) \$0.47M		\$0.45M (71%) \$0.41M		(91%) \$0.45M		M i	(73%) 0.42M	\$0.48M	\$0.43
ean: All Paren Monthly budget val 600K 500K 500K 400K	:Org: All re = 1/12 of total bud \$0.60M (93%) \$0.47M		\$0.45M (71%) \$0.41M		(91%) \$0.45M	\$0.40	M i	(73%) 0.42M	\$0.48M	\$0.43
ean: Ali Pařen konthly budget vel 600K 500K 500K 500K 500K 400K (75%) 300K	:Org: All re = 1/12 of total bud \$0.60M (93%) \$0.47M		\$0.45M (71%) \$0.41M		(91%) \$0.45M	\$0.40	M i	(73%) 0.42M	\$0.48M	get \$0.64 \$0.43 (67%

Total Budget to Cumulative Actuals by month as of Jun 22





Data Last Refreshed: 7/15/2022 8:48:09 AM

Expense





Better unit-level budget management has helped the University deal with decreases in state funding and frozen tuition







Results don't always improve just because you make a dashboard





FAR BEYOND Source: Stony Brook Analytics | International Rankings Dashboards



Stony Brook's organization and data environment







Stony Brook's Organizational Environment





The university data environment





Stony Brook's data environment (simplified)







Three models for dashboard development at Stony Brook



Model 1: Dashboards developed by dedicated university analytics unit



Request for dashboard

Pros: strong dashboard design and functionality; consistent design; can work with no additional resources

Cons: less expertise with underlying data; additional time for QA and consultation, volume and speed limitations

Model 2: Dashboards developed by analyst embedded in dedicated university analytics unit with salary support



Pros: strong dashboard design and functionality; consistent design; faster dashboard development

Cons: less expertise with underlying data; additional time for QA and consultation, supervision & training take development time from supervisor; "two bosses"; additional resources



Model 3: Analysts in various units develop dashboards following university standards



Cons: QA relies upon strong processes in all development units; reliability issues in one area reflect poorly on all other areas; enforcement of rules requires resources; despite an inventory, no one knows exactly what we have.



Stony Brook dashboard governance – Rules of the Road

Site managers responsible to ensure and maintain





Lessons learned and final thoughts





Design is as important as content







Invest in professional development







Develop and execute a communication plan







Monitor analytics views and users; anticipate decrease in other areas







Final thoughts about analytics implementation

"Confusion and clutter are failures of design, not attributes of information."



"Design cannot rescue failed content"

-Edward Tufte