Financial Management of a 21st Century Private Research University: Strategy-Centered Management

National Bureau of Economic Research

February 1, 2023

Robert A. Brown
President
Boston University



BOSTON UNIVERSITY Office of the President

From
The Costs of Higher Education, Howard R. Bowen 1980

"The unsettled questions about what higher education ought to be in the future are the substance of ongoing public debate about higher education."

The Ongoing Crisis of Funding Higher Education

"Between 10 and 30 percent of America's 3,100 colleges and universities will close or merge by 1995."

George Keller, *Academic Strategy*, 1982.



Clayton Christensen, *The Innovative University*, 2011.

Mount Ida College to close; UMass to take over campus

Under the agreement, undergraduate students in good standing at Mount Ida would be offered automatic admission to the Dartmouth campus of the University of Massachusetts so they can complete their degrees.



Boston Globe, April 6, 2018.

BU-Wheelock merger brings more than 110 layoffs

By Deirdre Fernandes Globe Staff, March 15, 2018, 5:16 p.m.



Wheelock College. DAVID L. RYAN/GLOBE STAFF, FILE 2017

Boston University will lay off a majority of Wheelock College's staff and faculty in its merger with the small Fenway school, employees at both schools were notified on Thursday.

Boston Globe, March 15, 2018.

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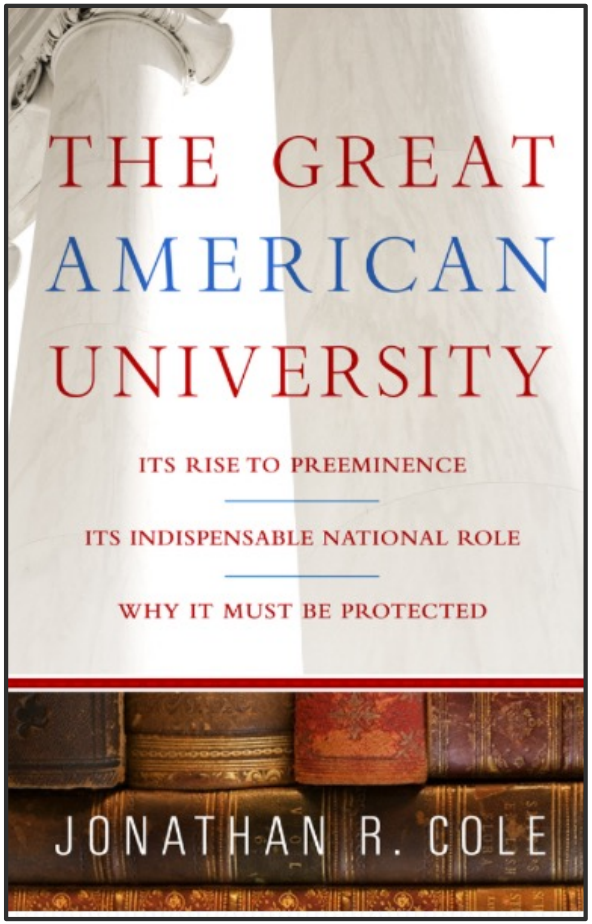
5 Reasons Why BU's $24K MBA Is A Big Deal

Why I'm intrigued.

By Joshua Kim · Published August 14, 2019

Multi-Faceted Missions of a Modern Research University

- Undergraduate education
- Graduate/Professional Education
- Research Doctoral Education
- Research and Scholarship
- College Athletics
- Public Service



The Revenue Theory of Cost

From *The Costs of Higher Education*, Howard R. Bowen 1980

In aggregate, universities have no strong incentive to cut costs in quest for profit because they do not seek profit. Dollars "saved" one place are invested in another.

The Five Laws of Higher Education Costs

1. The dominant goals of institutions are **educational excellence, prestige, and influence**. (**The mission**)
2. In the quest for excellence, prestige, and influence there is virtually no limit to the amount of money an institution could spend for seemingly fruitful educational ends.
3. Each institution raises all the money it can.
4. Each institution spends all the money it raises.
5. **The cumulative effect of laws 1-4 is toward ever-increasing expenditure.**

How do you measure effectiveness of mission?

All measures require funding
Few measures generate revenue
No measures value expense reduction

Academic Excellence

Student retention
Graduation
Placement
Alumni success
Research & scholarly activity
Facilities
Rankings

Prestige

Academic program selectivity
Faculty quality
Research & scholarly activity
Fundraising (government/private)
Athletic prowess
Facilities
Rankings

Influence

Alumni influence
Faculty influence
Athletic prowess
Research & Scholarship
Peer emulation

The financial state of private research universities

Private urban research universities used in benchmarks

(Using publicly available data for peers and private data for BU)

- Member of American Association of Universities (AAU)

Brown University*
Boston University*
Case Western Reserve University*
Columbia University*
Cornell University*
Emory University*
The George Washington University
Johns Hopkins University*
New York University*
Northwestern University*
University of Miami
University of Pennsylvania*
University of Rochester*
University of Southern California*
Boston College
Northeastern University
Tufts University*

Observations about revenues for peer group

1. Endowment income is a small fraction of overall revenue: average = 11%; many less than 5%
2. Tuition is largest single revenue stream: average = 29%; range is 6 - 68%
3. Research universities spend almost 25 cents to raise a dollar of external support.

   Sponsored research is cross-subsidized by other revenue and institutions brag about research volume.

Observations about expenses for peer group

1. Faculty salaries grow faster than inflation because of competition.
2. Faculty size grows because of decreased teaching responsibilities (decreasing student-to-faculty ratio). Shifting to non-tenure-track faculty occurring at some institutions.
3. Increasing student services adds cost.
4. Cross-subsidy of research and scholarship adds cost.
5. Wide variation in efficiency of expenses and space utilization of research enterprise.

Questions for a sustainable research university

1. What are the long-term implications of the Revenue Theory of Cost and Bowen's Law?
2. Will market power of an institution's brand continue to reinforce student demand and tuition pricing power?
3. Is the breadth of the university mission sustainable?
   Corollary: Are there enough resources for a research university to compete in every discipline based on excellence?
4. *If a Research University is going to implement a differentiable strategy, what financial management system is best?*

How to lead a University with Bowen's Law?

Zemsky, Wegner, and Massy* suggest:

To maximize mission attainment subject to limitations imposed by marketplace, productivity, and finance

"Be Market-Smart and Mission-Driven"

**Remarking the American University: Market-Smart and Mission-Centered*, 2005.*

Long-term strategy, coupled with effective management, are necessary for a sustainable and thriving research university

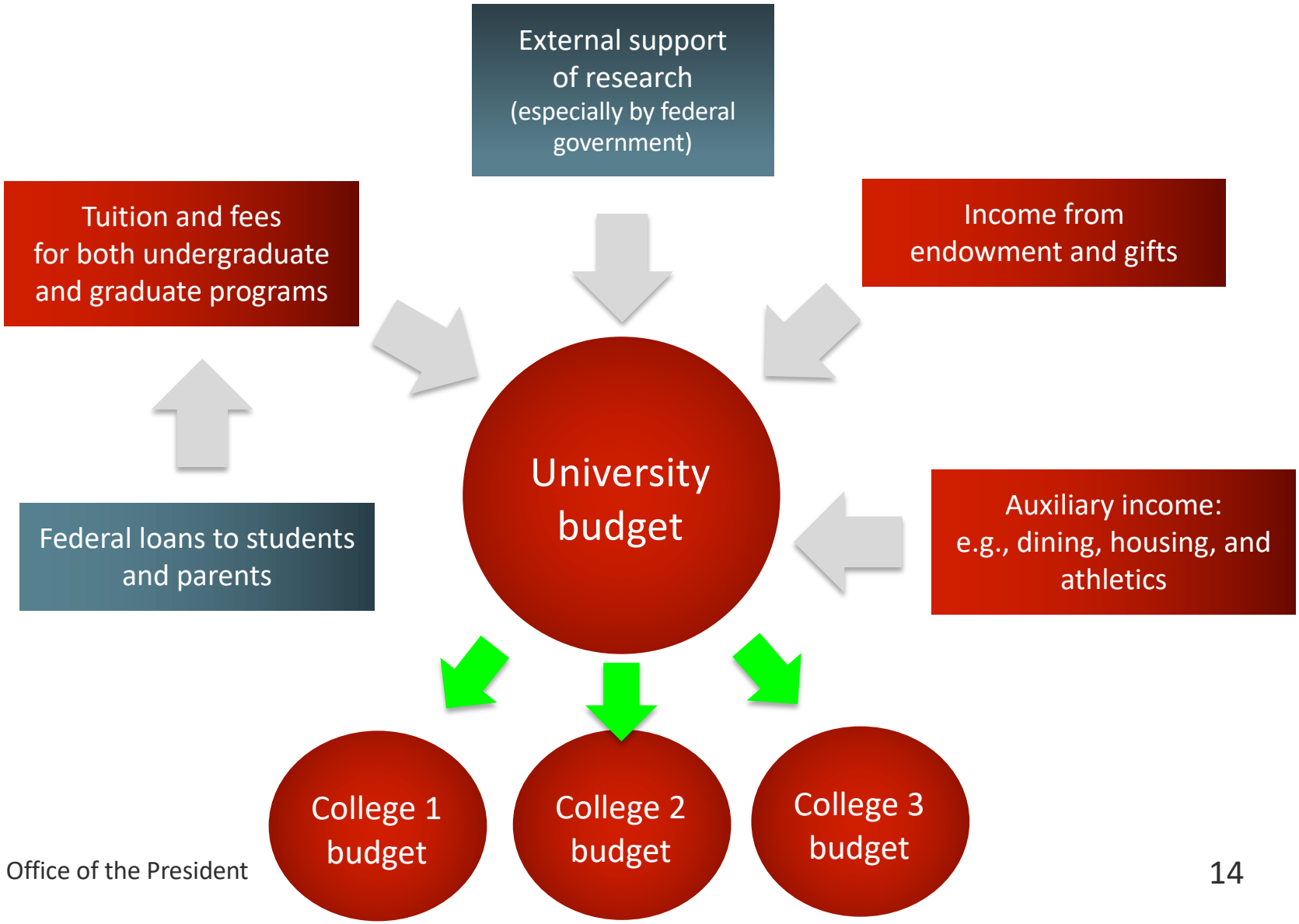
- Long-term strategy for identifying investments in future growth and mission execution
- Effective management for cost control and continual focusing of resources on long-term objectives.

What management system is best for these objectives?





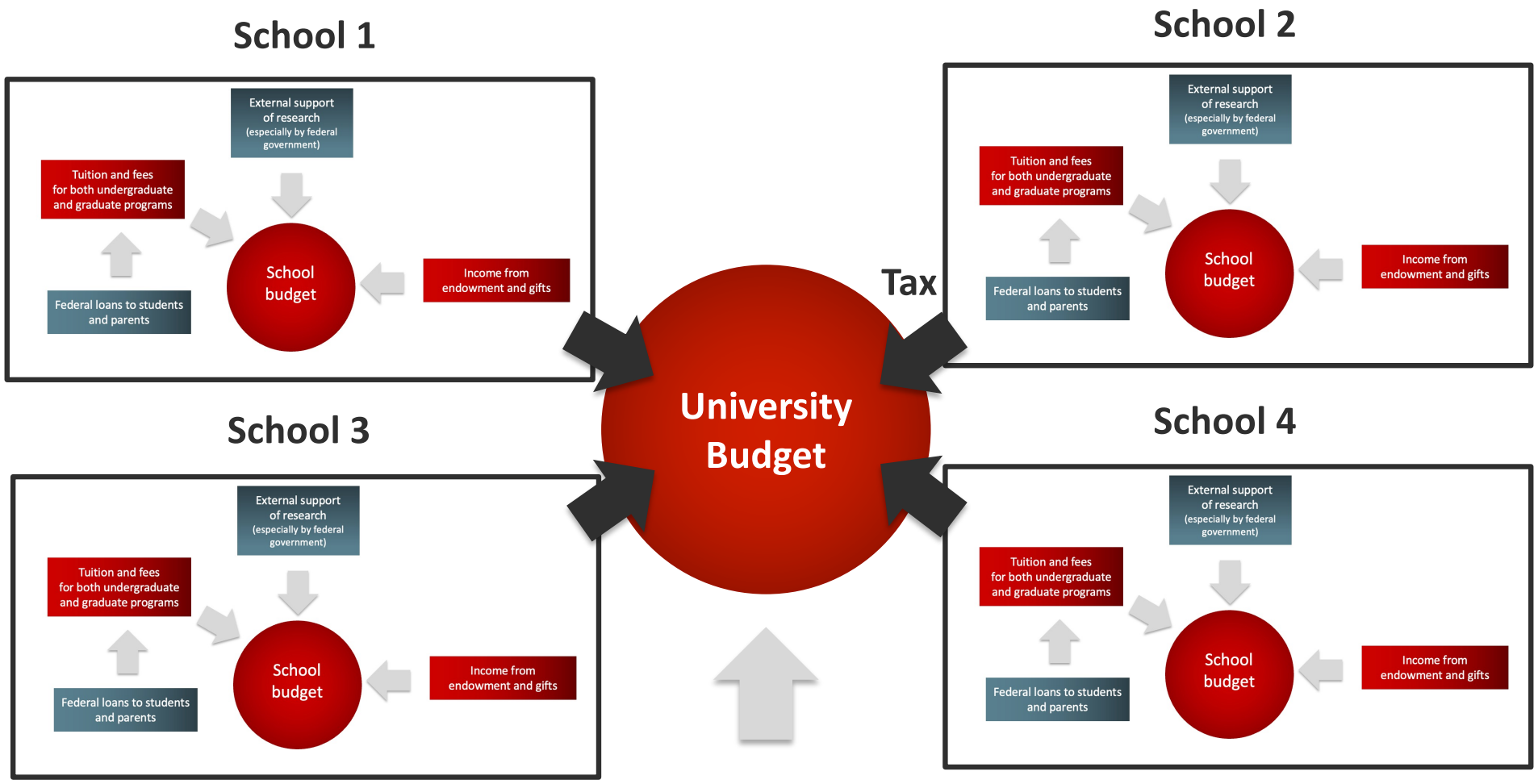
Revenues for Private Research Universities For "Centralized Budgeting"



Central Budgeting

1. Puts ultimate budget authority in hands of small number of senior leaders who also are responsible for revenues, expenditures and balance sheet of the university
2. Funding can be distributed to schools/colleges either as line-item or block funding
3. Budget requests generated by schools/colleges & central units are considered by central management. Usually far in excess of available resources.
4. Requires accurate and transparent data for revenues, expenses and reserves — now available with modern ERP and SIS software

Revenues for Private Research Universities For Responsibility Centered Management (RCM)



Auxiliary income:
e.g., dining, housing, and athletics

Revenue Centered Budgeting

Developed in 1970's to move authority closer to sources of revenue

(E.L. Whalen, Indiana Press, 1991)

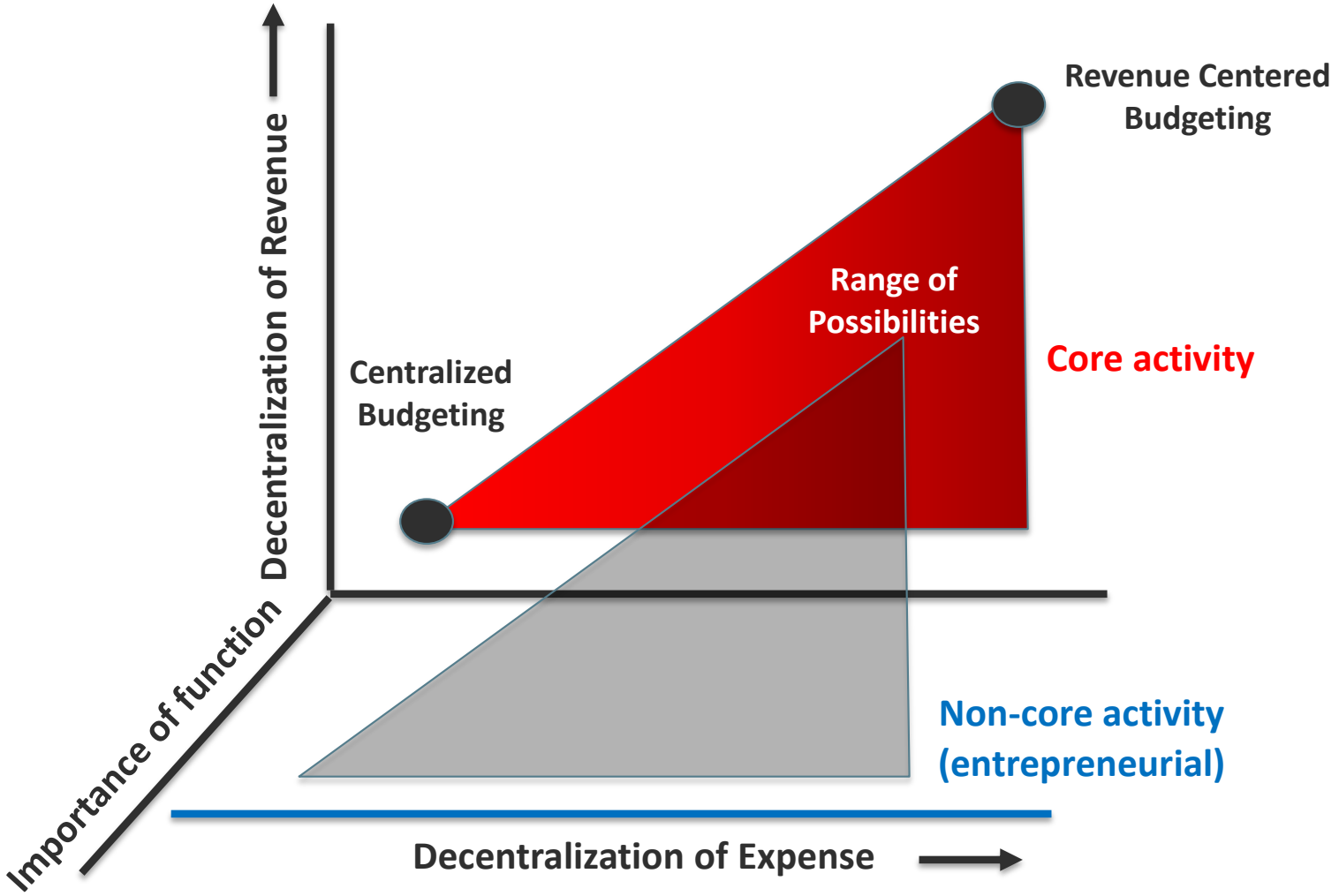
Original Objectives

- Incentivizes units to generate revenue and control costs to fund local initiatives
- Leads to more entrepreneurial local (school/college) management. Be Market-smart, especially in professional education.

1. Puts ultimate budget authority in hands of deans of schools & colleges
2. Taxes units for agreed upon central services and cross-subsidies based on allocation model for revenues
3. Focus on university strategy relies on solution of the "Principal's problem," in the not-for-profit setting.

The Continuum of Budget Models

Centralized to Revenue Centered Budgeting



Adapted from W.F. Massy, *Reengineering the University*, 2016.

Strategy-Center Management
A Hybrid Approach

Centrally Budget the Execution of Institutional Strategy

Undergraduate education
Core graduate programs
Student access and diversity
Major investments in research excellence & impact
Development organization
Global strategy
Digital strategy



Use Revenue Sharing Models for Non-Core Activities

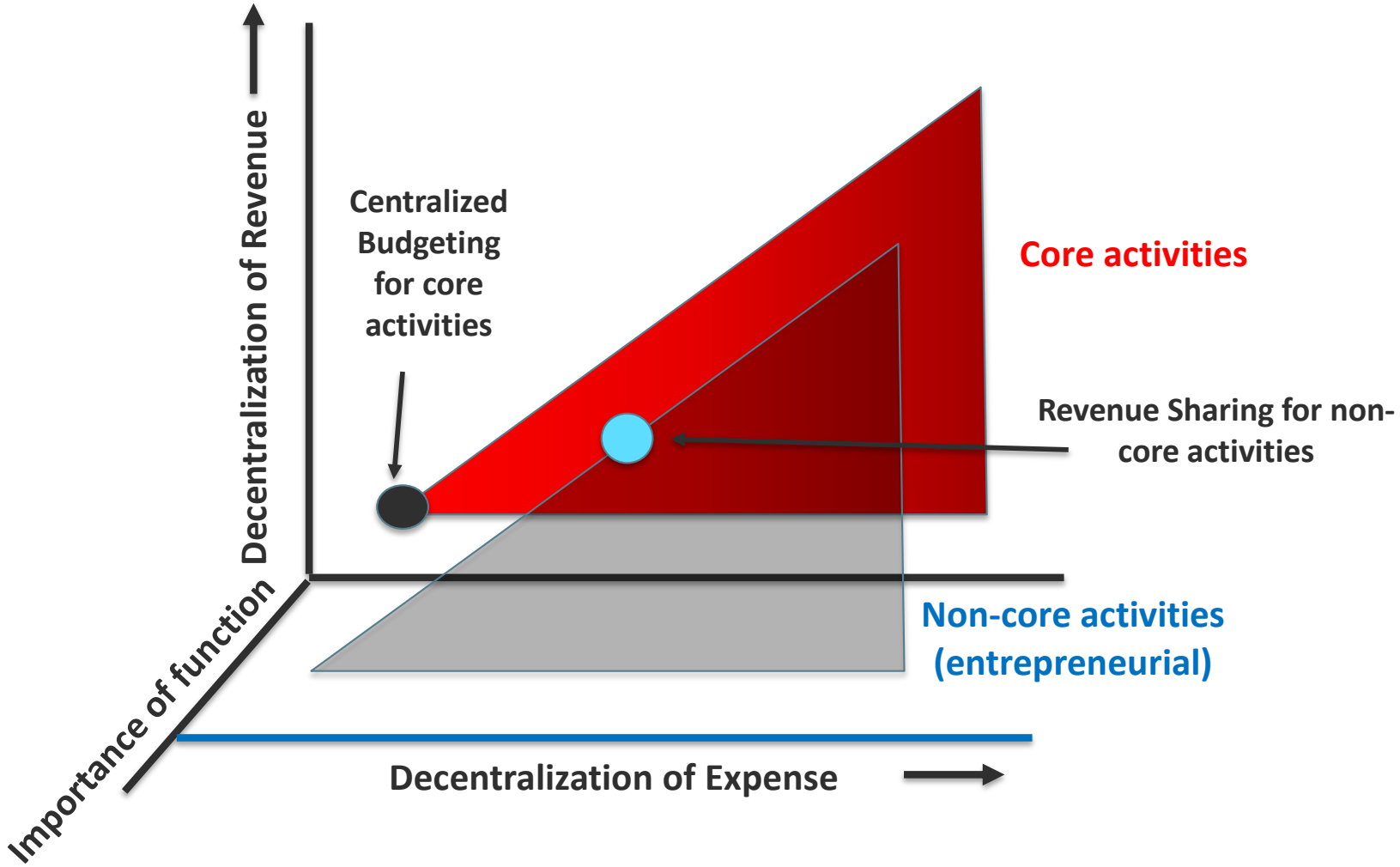
Market-based professional graduate programs
Schools & colleges with distinct market-facing business models (medicine and dentistry)
Non-core digital programs*
Fundraising*

* Execute leveraging centralized organization

Strategy-Center Management
Boston University implementation

1. Implement *Centralized Budgeting* with effective, data-driven annual expense management with goal of meeting strategic objectives and generating central reserves. (Requires modern ERP and SIS).
2. Create strategic agreements for revenue sharing for non-core educational/entrepreneurial programs and activities, such as graduate online education.
3. Allocate gift and endowment revenue to academic units that raise them to incentivize fundraising.
4. Fund centrally all key services including development, research administration, and student services. (Leads to uniformity of services)
5. Use agreed-upon plans to inform annual budget increases and annual deployment of reserves either to schools/colleges or all-university initiatives.
6. Integrate capital budgeting with annual & reserve budgeting.

Strategy-Center Management
A Hybrid Approach

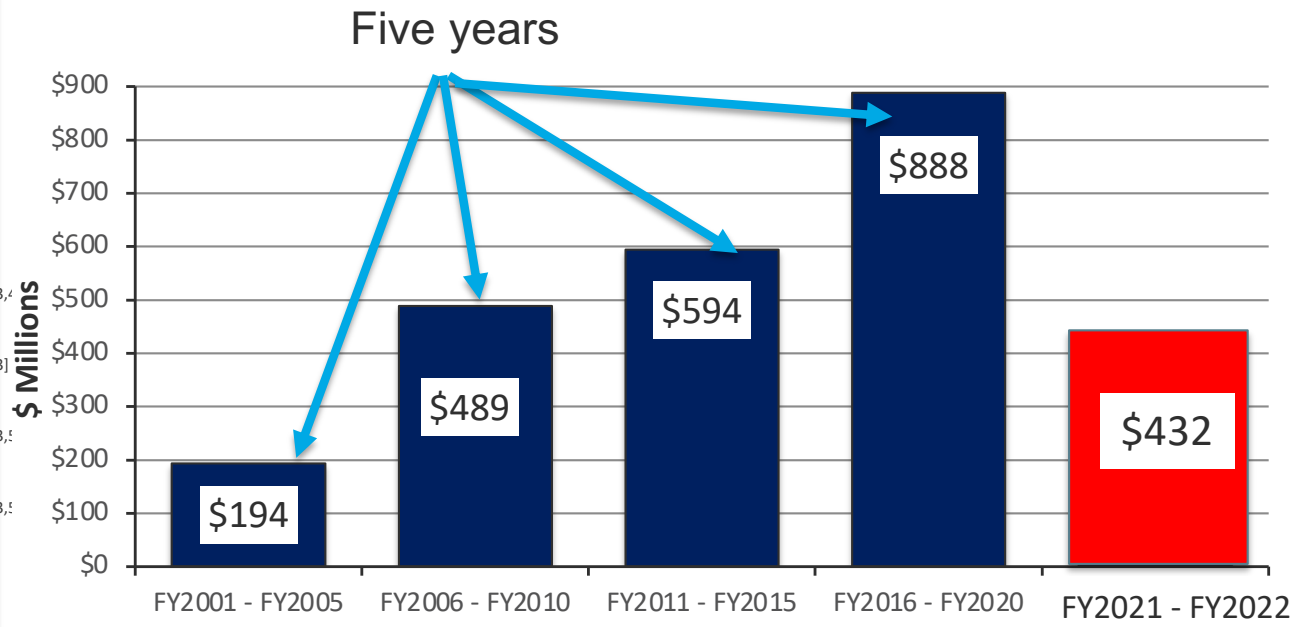


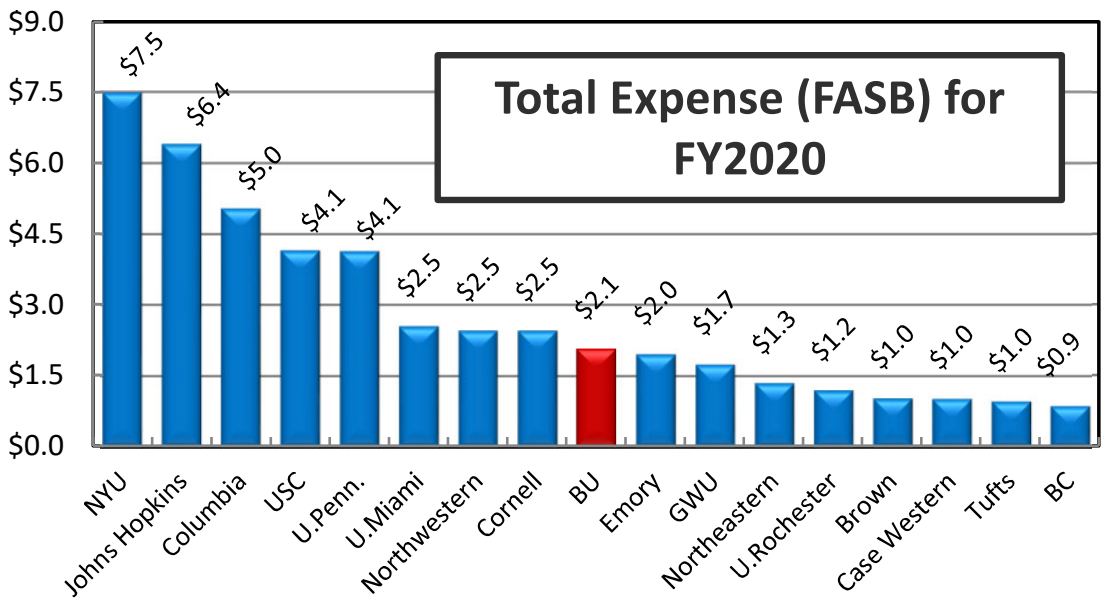
Adapted from W.F. Massy, Reengineering the University, 2016.

Free Cash Flow Margin (FASB)
Five-Year Average: FY17-21

Rank for 5-Year Fiscal Period Ending 17	18	19	20	21	Institution	5-Year Average
8	6	3	3	**1**	University of Pennsylvania	8.4%
2	1	2	2	**2**	Boston University	8.4%
3	2	1	1	**3**	Case Western Reserve University	6.9%
5	4	4	4	**4**	Northeastern University	6.9%
10	9	10	11	**5**	University of Miami	3.4% [3,4]
9	8	6	7	**6**	University of Rochester	3.3% [3]
7	7	9	6	**7**	Emory University	2.9% [3,5]
16	15	14	8	**8**	New York University	2.1% [3,5]
12	10	7	9	**9**	Brown University	1.8%
17	16	15	13	**10**	Cornell University	1.2%
14	12	12	10	**11**	Tufts University	0.5%
4	3	5	5	**12**	Johns Hopkins University	0.5% [6]
1	5	8	12	**13**	Northwestern University	0.2% [5]
15	13	16	15	**14**	University of Southern Cal	0.1% [3]
11	17	13	16	**15**	George Washington University	-0.4%
6	14	17	17	**16**	Boston College	-1.1% [4]
13	11	11	14	**17**	Columbia University	-1.9%
					Average	**2.5%**

Generated Reserves (Fund Accounting)
FY2001–FY2021





Increasing Financial Stability Over Time

Net Asset Growth (Five-Year Average): FY17-21

Rank for 5-Year Fiscal Period Ending 17	18	19	20	21	Institution	Average Annual Growth in Net Assets	
7	5	1	1	**1**	Johns Hopkins University	19.3%	
12	9	7	4	**2**	Brown University	15.5%	
6	7	4	5	**3**	University of Miami	14.5%	[3,4]
3	3	3	2	**4**	Northeastern University	13.4%	
4	4	5	7	**5**	University of Pennsylvania	13.2%	[3]
2	2	2	3	**6**	Boston University	13.0%	
15	13	10	8	**7**	Emory University	10.8%	[3,5]
13	15	14	14	**8**	University of Rochester	10.7%	[3]
1	1	6	6	**9**	New York University	10.6%	[3,5]
17	16	12	10	**10**	Tufts University	10.3%	
10	12	11	12	**11**	Boston College	10.0%	[4]
11	11	13	15	**12**	Cornell University	8.3%	
9	8	9	11	**13**	Columbia University	8.1%	
8	10	15	13	**14**	Northwestern University	7.8%	[5]
16	17	16	16	**15**	Case Western Reserve University	7.8%	
5	6	8	9	**16**	University of Southern Cal	7.5%	[3]
14	14	17	17	**17**	George Washington University	3.8%	
					Average	**10.9%**	

Key Drivers for Upgrade to AA3 stable (2017)

1. Large, urban research university with programmatic diversity and economies of scale
2. **Careful fiscal management provides for surplus operations and strong operating cash flow**
3. **Growing wealth and liquidity through surpluses, investment returns and gifts**
4. Substantial holdings of marketable real estate in the Boston metropolitan area
5. Excellent strategic positioning reflects strong management practices of continuous improvement, benchmarking and thorough strategic and financial planning

Moody's Rating History (1997–2021)

Year	Rating
2017	AA3 stable
2016	A1 positive
2013	A1 stable
2011	A2 positive
2008	A2 stable
2006	A3 stable
2004	A3 negative
2002	A3 stable
1997	A3 negative

MOODY'S INVESTORS SERVICE

Sponsored Program Awards at Boston University

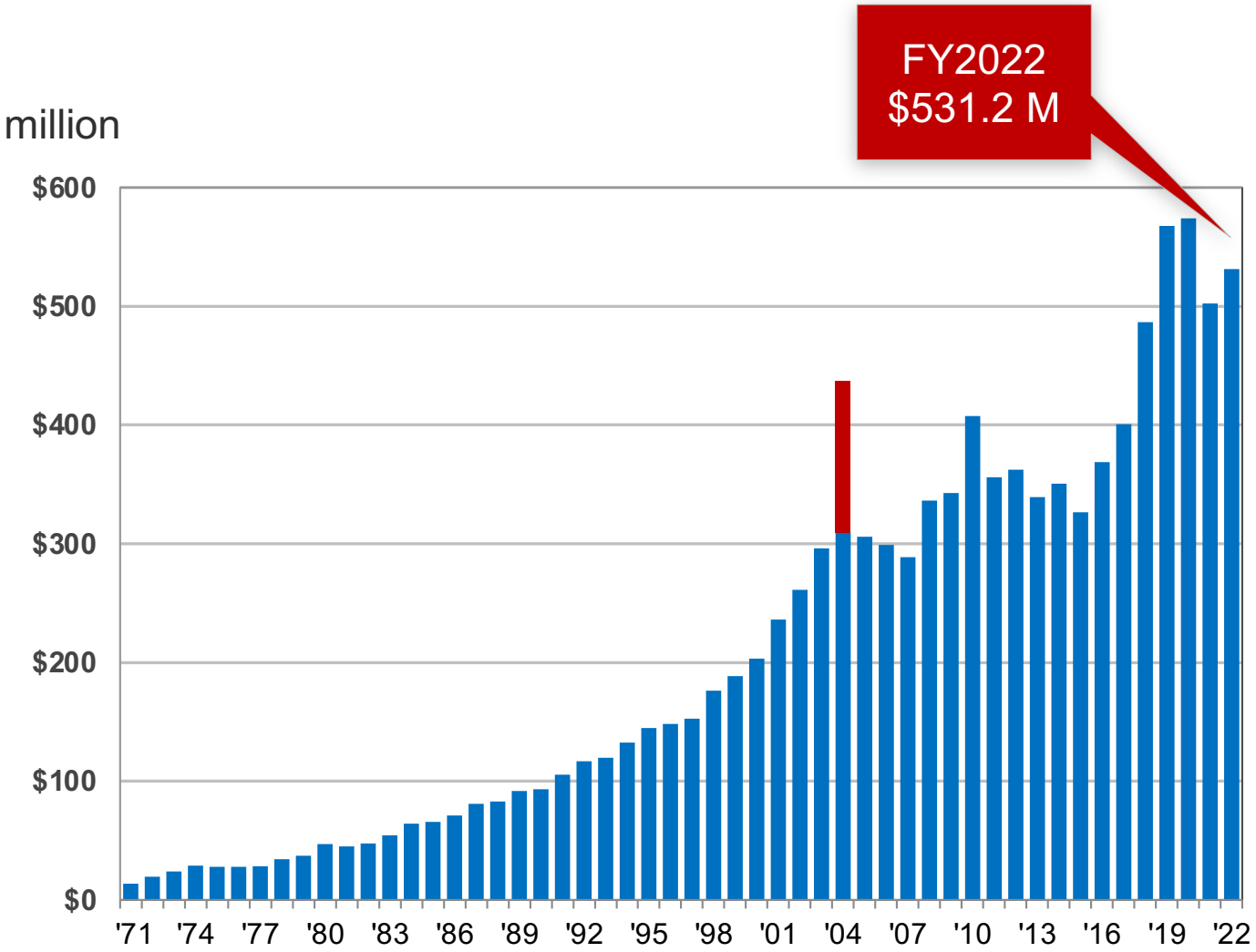
FY1971–2022

New research awards in 2022: $ 531.2 M*

*Does not include $ 80 M of research performed by BU faculty in Boston Medical Center

Association of American Universities
Inquiry · Innovation · Impact

Since 2012



Excluding Financial Aid. FY2004 includes $128.0 million for the construction of the National Emerging Infectious Diseases Laboratories (NEIDL).

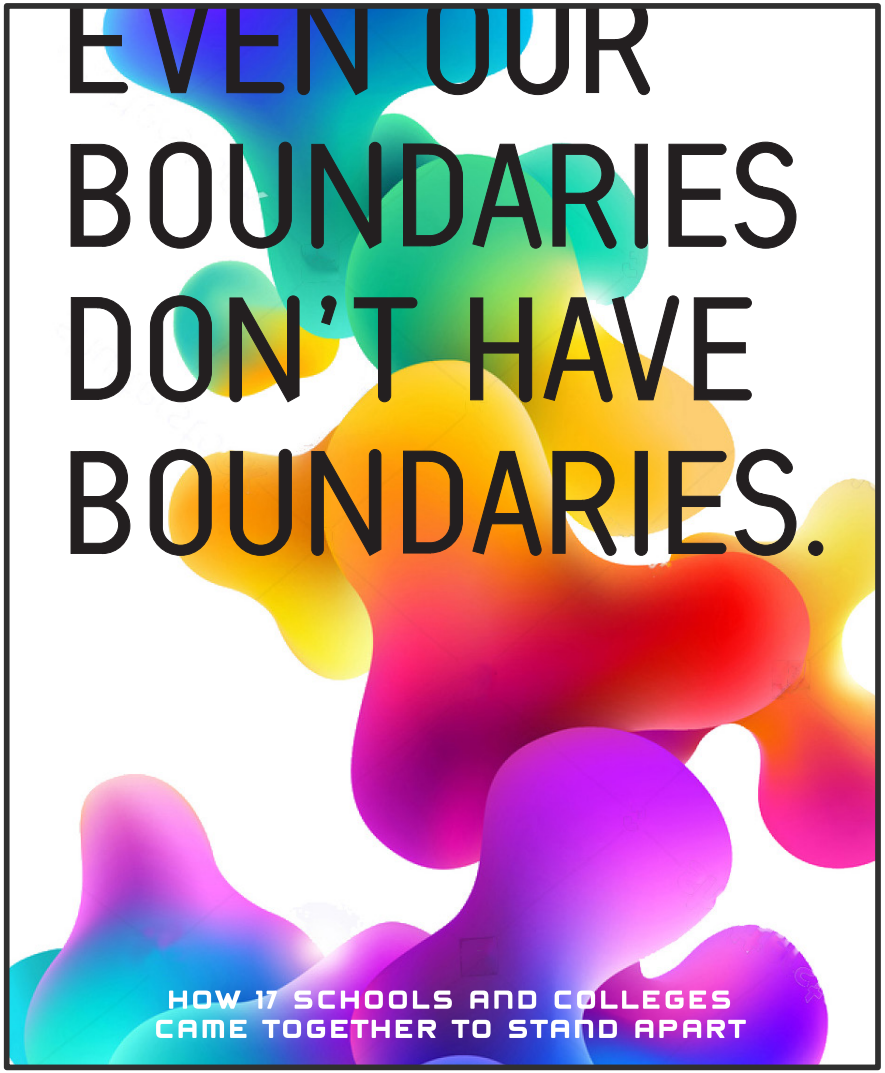
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University organization in the 21st century must be more interconnected to be relevant in education and research

Our Idea

Connect people and programs across the University to create opportunities for collaboration and education in ways that would be difficult at other schools.

This is how the world works today, and how we can change the world.



Centrally Funded Strategic Initiatives since 2012
(outside schools and colleges)

- **Education and Community**
  - Expansion of uniform undergraduate general education requirement
  - 130% increase in undergraduate need-based financial aid (over 10 tens) resulting in increased socioeconomic diversity of student body
  - Increasing academic excellence of incoming students
  - Expansion of multi-cultural center and creation of first-generation center
  - Creation of BU Virtual central unit for production of online-at-scale programs
  - Creation of Faculty of Computing and Data Sciences: Novel academic structure and major new facility
- **Research**
  - Creation of Life Science and Engineering initiative: space + research fund
  - Funding of joint faculty positions with medical school
  - Large-scale funding of five key strategic research centers
- **Organization**
  - 60% increase in development & alumni relations staff and doubling of cash raised

Strategic All-University Research Centers



National Emerging Infectious Diseases Laboratory



Rajen Kilachand Center for Integrated Life Sciences & Engineering

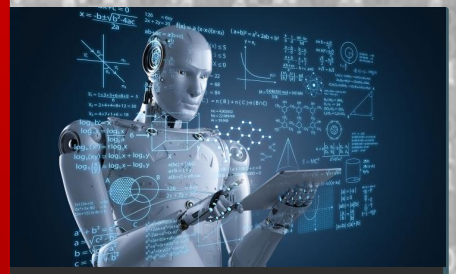
Center for Antiracist Research



Faculty of Computing and Data Science (a new type of academic unit)

A bridge across all of Boston University

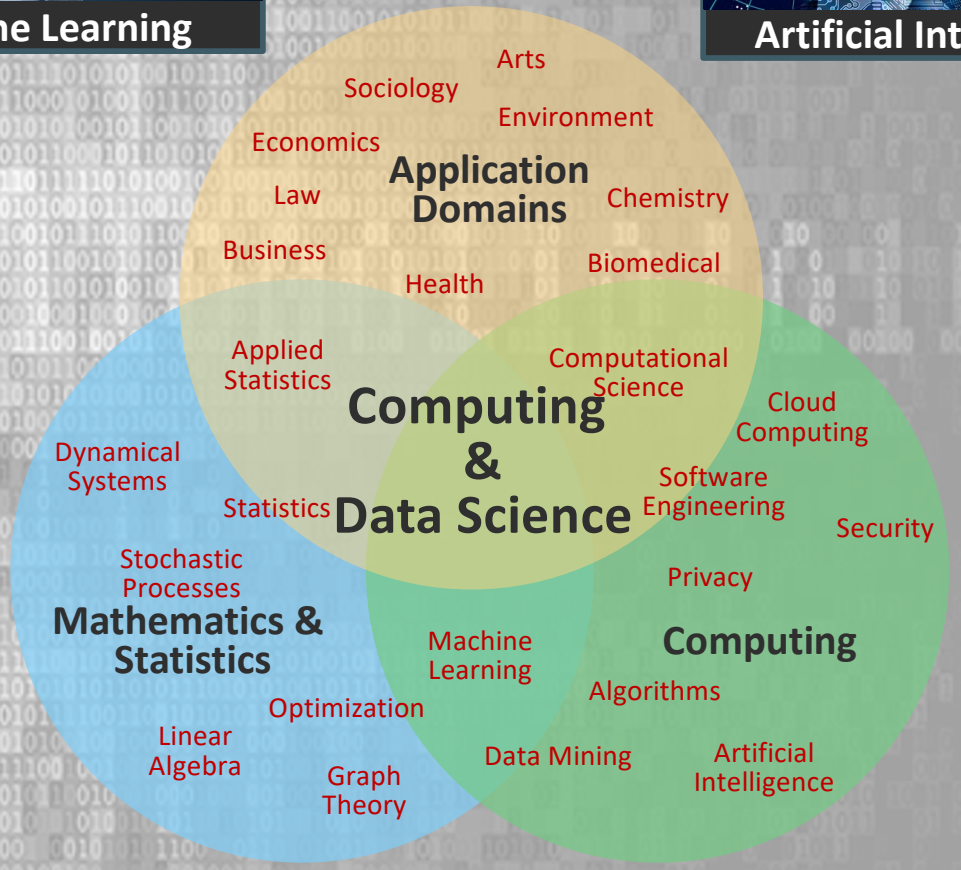
- Faculty and programs integrated with the schools/colleges and Hariri Institute
- Both centrally located and distributed
- Pushing the boundaries of what is possible and its application

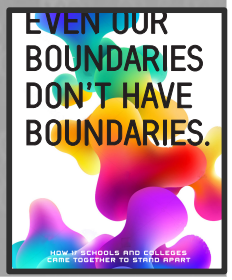


Machine Learning



Artificial Intelligence





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Faculty of Computing and Data Science

A new type of academic unit interconnected with all schools and colleges

40+ faculty, 10 new, and 4 ongoing searches



AGUÊMON YVES ATCHADÉ
Professor
Founding Faculty
Mathematics & Statistics, CAS



MARGRIT BETKE
Professor
Founding Faculty
Computer Science, CAS



JOHN BYERS
Professor
Founding Faculty
Computer Sciences, CAS



NGOZI OKIDEGBE
Assistant Professor, CDS
Associate Professor, LAW



KRZYSZTOF ONAK
Shibulal Family Career Development Assistant Professor
CDS



FRANCESCO ORABONA
Associate Professor
Founding Faculty
Electrical & Computer Engineering, ENG



RAN CANETTI
Professor
Founding Faculty
Computer Science, CAS



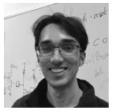
VASAN RAMACHANDRAN
Professor
Founding Faculty
Medicine & Epidemiology, MED



DAVID COKER
Professor
Founding Faculty
Chemistry, CAS



MARK CROVELLA
Professor
Founding Faculty
Computer Science, CAS



ASHOK CUTKOSKY
Assistant Professor
Affiliated Faculty
Electrical & Computer Engineering, ENG



EMILY RYAN
Associate Professor
Founding Faculty
Mechanical Engineering, ENG



KATE SAENKO
Associate Professor
Founding Faculty
Computer Science, CAS



VENKATESH SALIGRAMA
Professor
Founding Faculty
ECE & SE, ENG



STACEY DOGAN
Professor
Founding Faculty
School of Law



GIANLUCA STRINGHINI
Assistant Professor
Affiliated Faculty
Electrical & Computer Engineering, ENG



KIRA GOLDNER
Shibulal Family Career Development Assistant Professor, CDS



NEHA GONDAL
Assistant Professor
Founding Faculty
Sociology, CAS



LEI GUO
Associate Professor
Founding Faculty
Emerging Media Studies, COM



TERZI
Professor
Founding Faculty
Computer Science, CAS



VAN ALSTYNE
Professor
Founding Faculty
Information Systems, Questrom



MAYANK VARIA
Associate Professor
CDS



JONATHAN HUGGINS
Assistant Professor
Founding Faculty
Mathematics & Statistics, CAS



WESLEY WILDMAN
Professor
Founding Faculty
Philosophy, Theology, & Ethics, STH



VIJAYA KOLACHALAMA
Associate Professor
Founding Faculty
Computational Biomedicine, MED



BRIAN KULIS
Associate Professor
Affiliated Faculty
Electrical & Computer Engineering, ENG



ALLISON MCDONALD
Assistant Professor, CDS



GEORGIOS ZERVAS
Associate Professor
Founding Faculty
Marketing, Questrom

Undergraduate major
launched in fall 2022

Undergraduate minor
launched in fall 2021

PhD program
launched in fall 2021

Center for Computing and Data Sciences

- 367,000 gsf
- 19 stories (tallest BU building)
- Over 1,300 researchers
- Major new teaching center

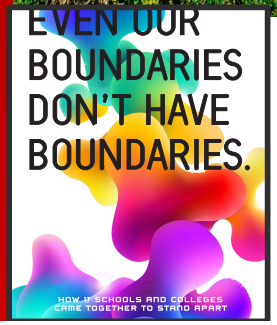
Bringing together:

- Computer science
- Mathematics & Statistics
- Faculty of Computing & Data Sciences (new)
- Hariri Institute for Computing

Net-zero carbon building:

- Geothermal heating and cooling



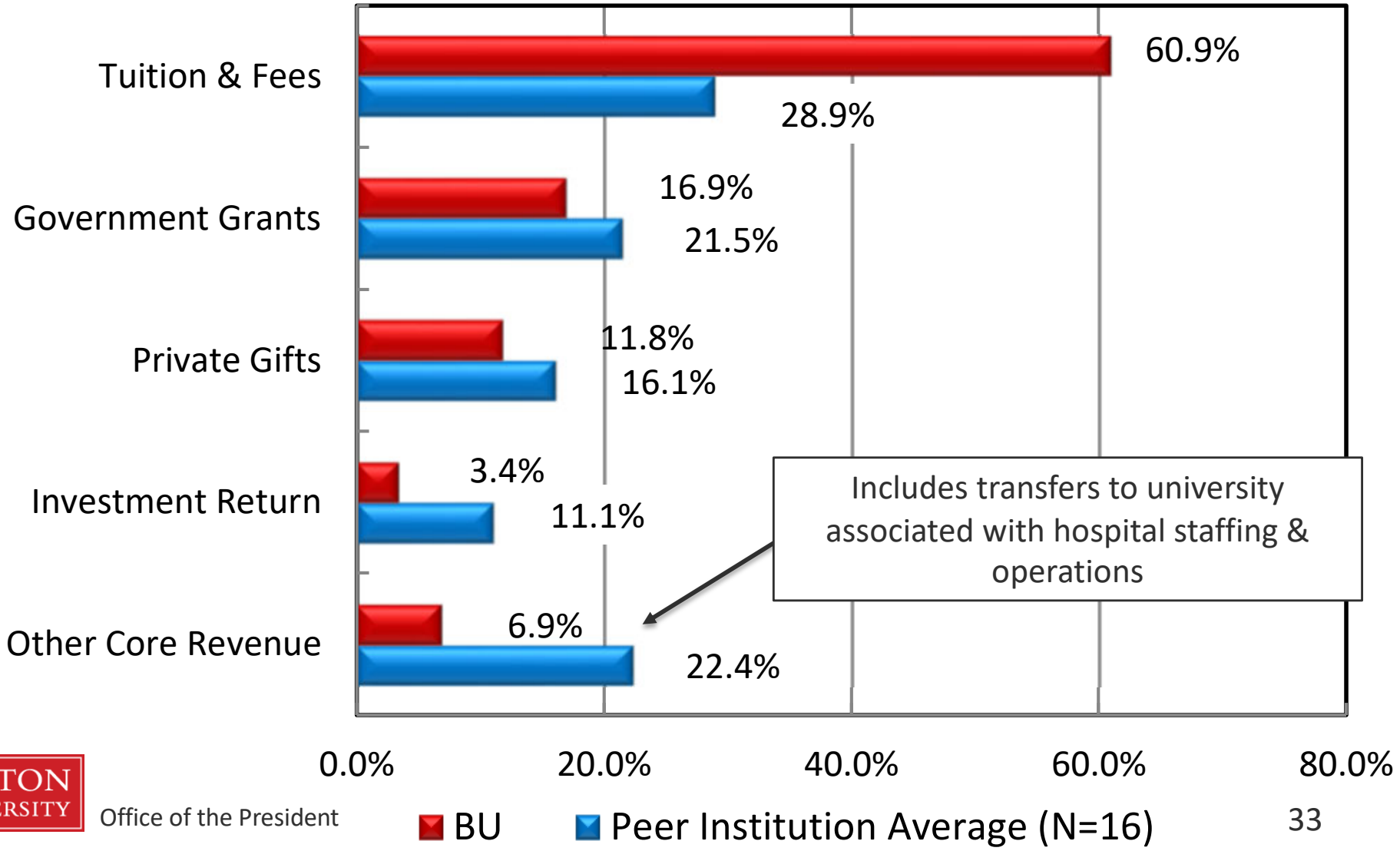



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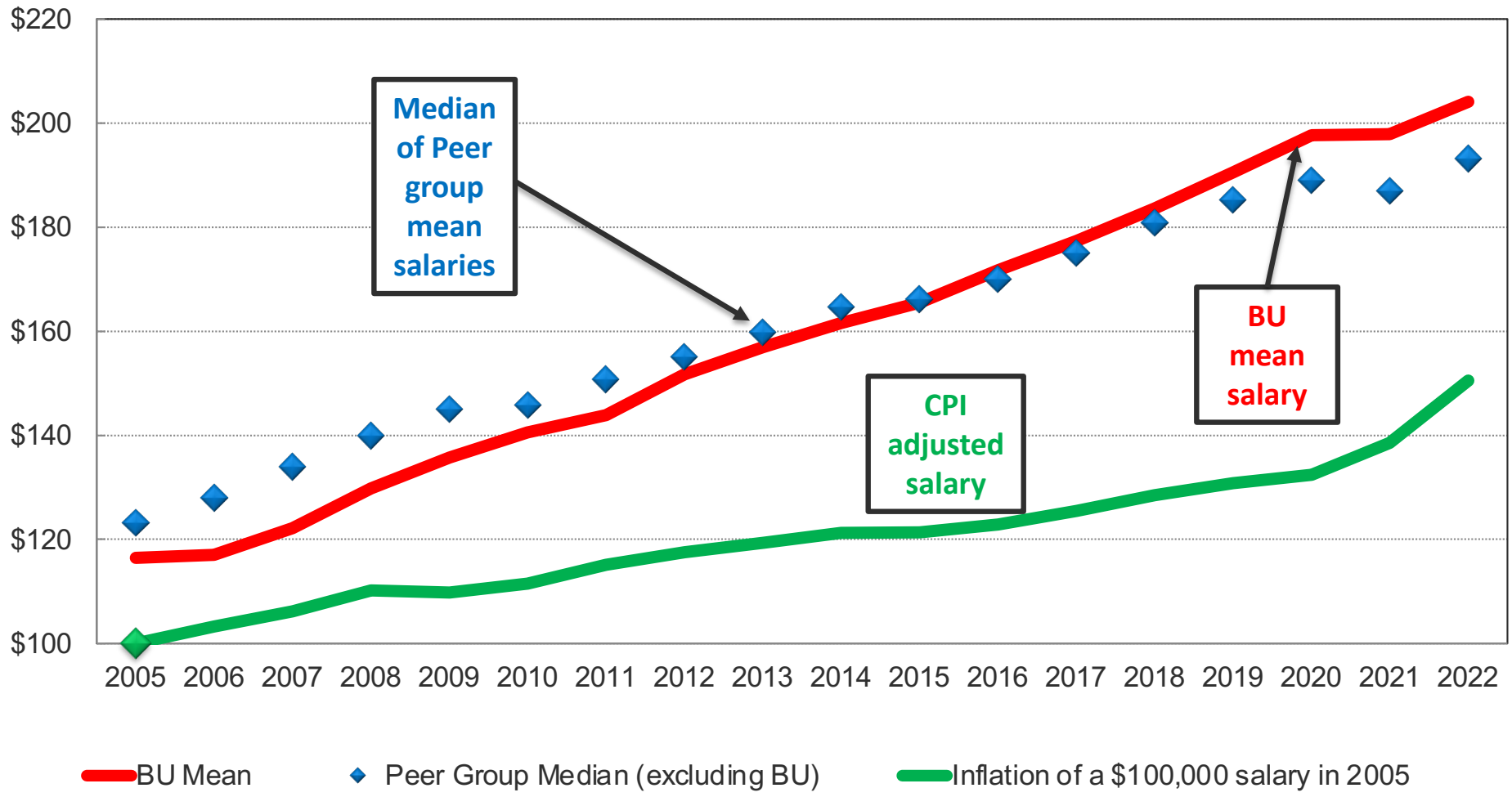
Underlying Data

Distribution of revenues for peer group: FY2020
ipeds data

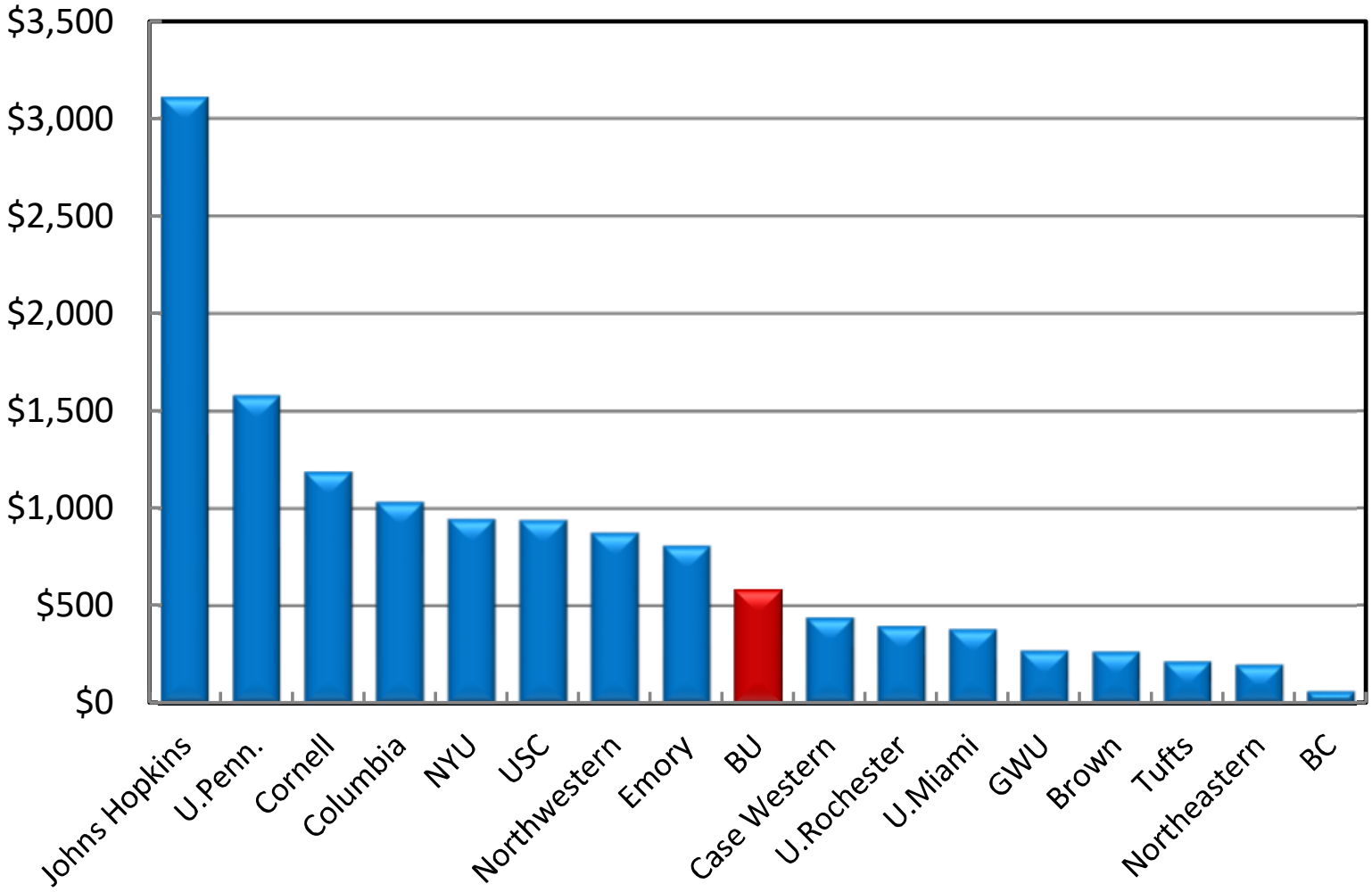
Excludes hospitals, dining & housing and other external operations



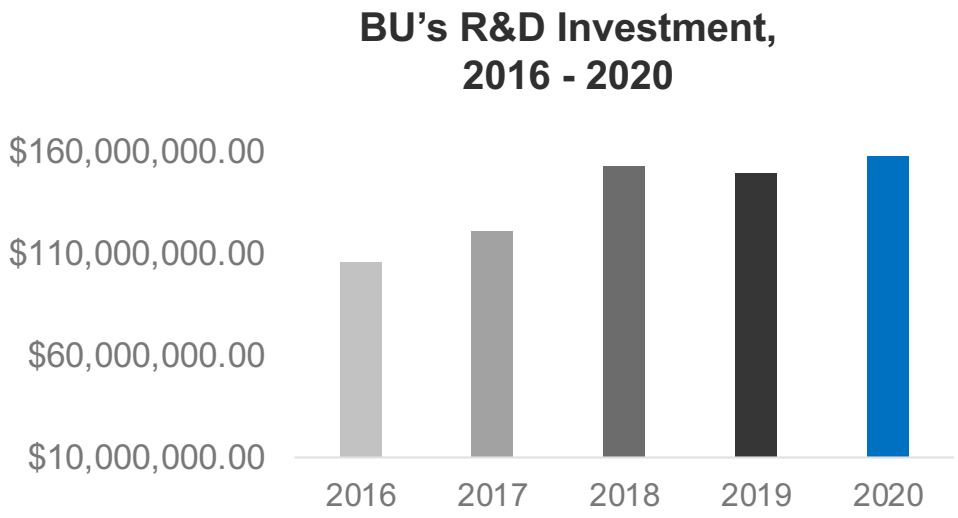
BU and Peer Average Faculty Salaries: 9-month Professors
FY 2005 – FY 2022

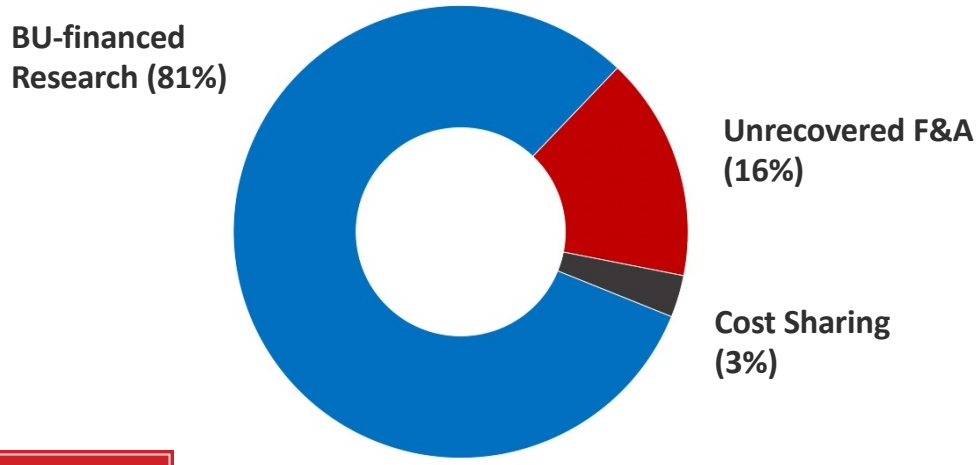


Research revenues of peer group for FY2020



University Investment in Research
(NSF HERD Study)





Institutional Research Contributions at AAU Private Institutions, 2020

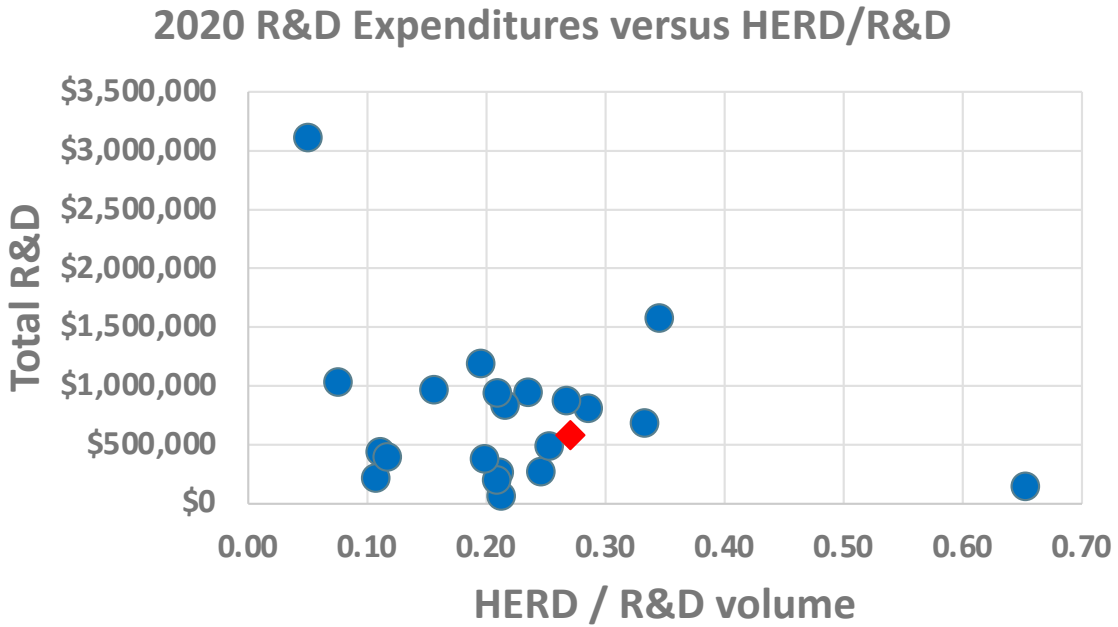
1	Penn	491.73 M
2	Harvard	381.60 M
3	Yale	318.20 M
4	Northwestern	243.10 M
5	Emory	239.40 M
6	NYU	229.17 M
7	Cornell	227.32 M
8	USC	189.17 M
9	Vanderbilt	184.71 M
10	WUSL	157.73 M
11	Duke	154.08 M
12	Johns Hopkins	152.04 M
13	**BU**	**149.77 M**
14	Stanford	124.71 M
15	MIT	116.76 M
16	Carnegie Mellon	107.84 M
17	Princeton	80.41 M
18	Columbia	74.95 M
19	Tulane	53.33 M
20	Case Western	44.09 M

Self reported & unaudited

Return on Investment in Research 2020

Averages

- Universities spend 23 cents to generate $ 1 of external research funding.
- Average $ 747 million in annual external support.

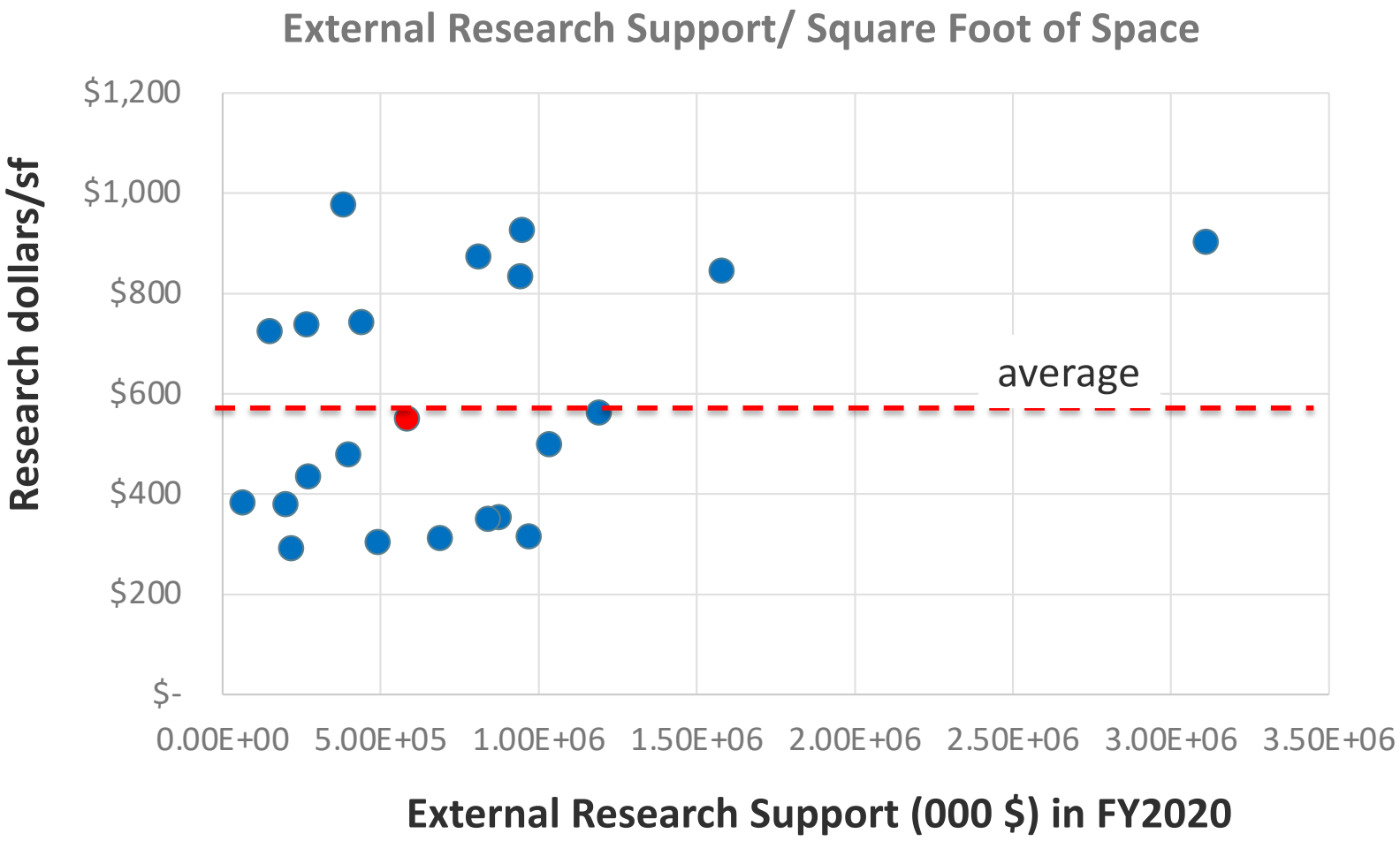


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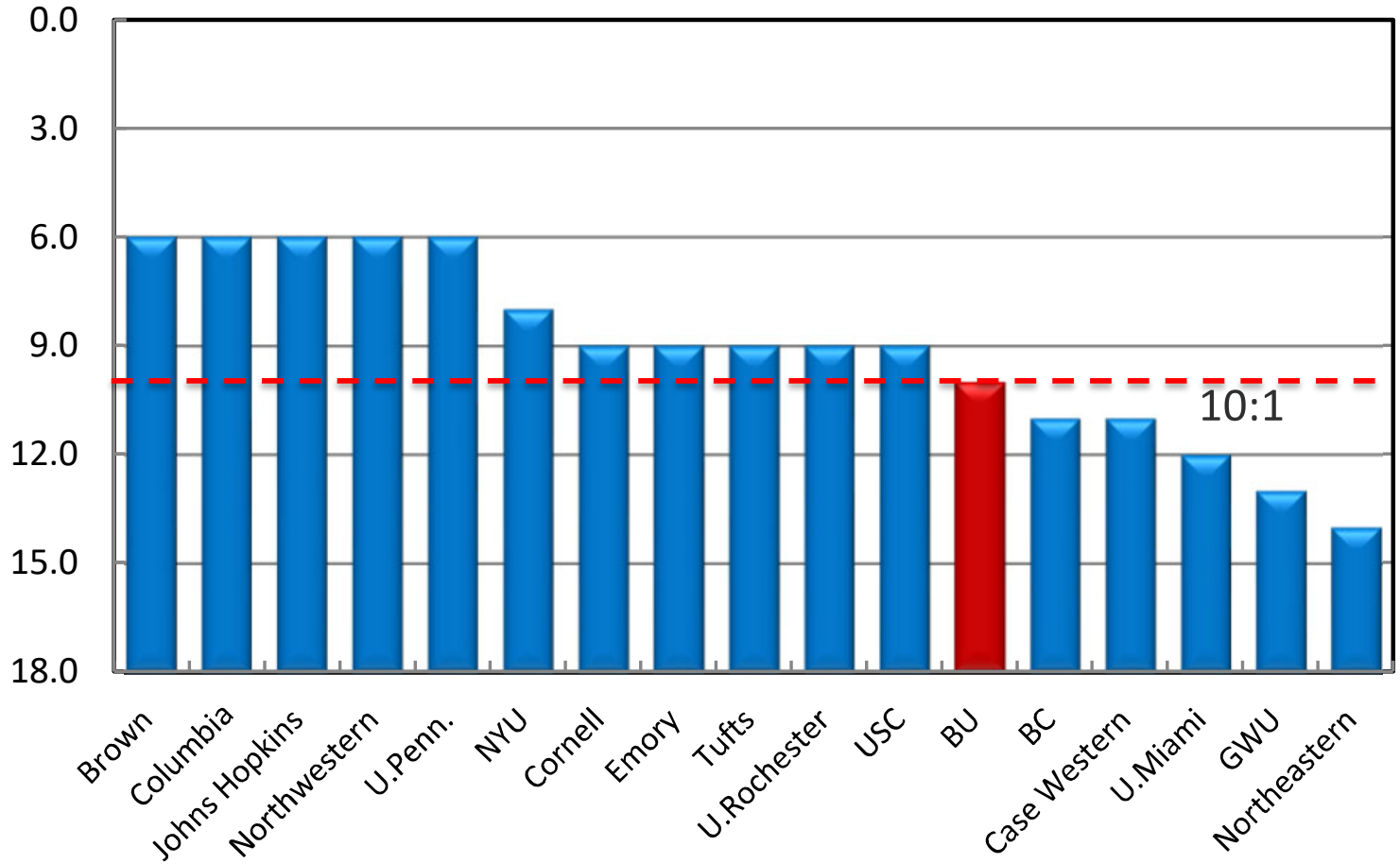
Institution	HERD / R&D	Total R&D ($)
Boston C.	0.21	63,063
Boston U.	0.27	583,267
Brown U.	0.21	266,127
Case Western Reserve U.	0.11	439,778
Columbia U.	0.08	1,032,909
Cornell U.	0.20	1,190,063
Emory U.	0.29	808,792
George Washington U.	0.25	270,369
Johns Hopkins U.	0.05	3,110,494
New York U.	0.24	947,293
Northeastern U.	0.21	200,068
Northwestern U.	0.27	874,671
Ohio State U.	0.16	968,260
Purdue U.	0.33	687,144
Syracuse U.	0.65	149,652
Tufts U.	0.11	216,241
U. California, Berkeley	0.22	840,000
U. California, Irvine	0.25	490,597
U. Miami	0.20	381,410
U. Pennsylvania	0.35	1,579,364
U. Rochester	0.12	397,211
U. Southern California	0.21	941,198

Research Space Utilization

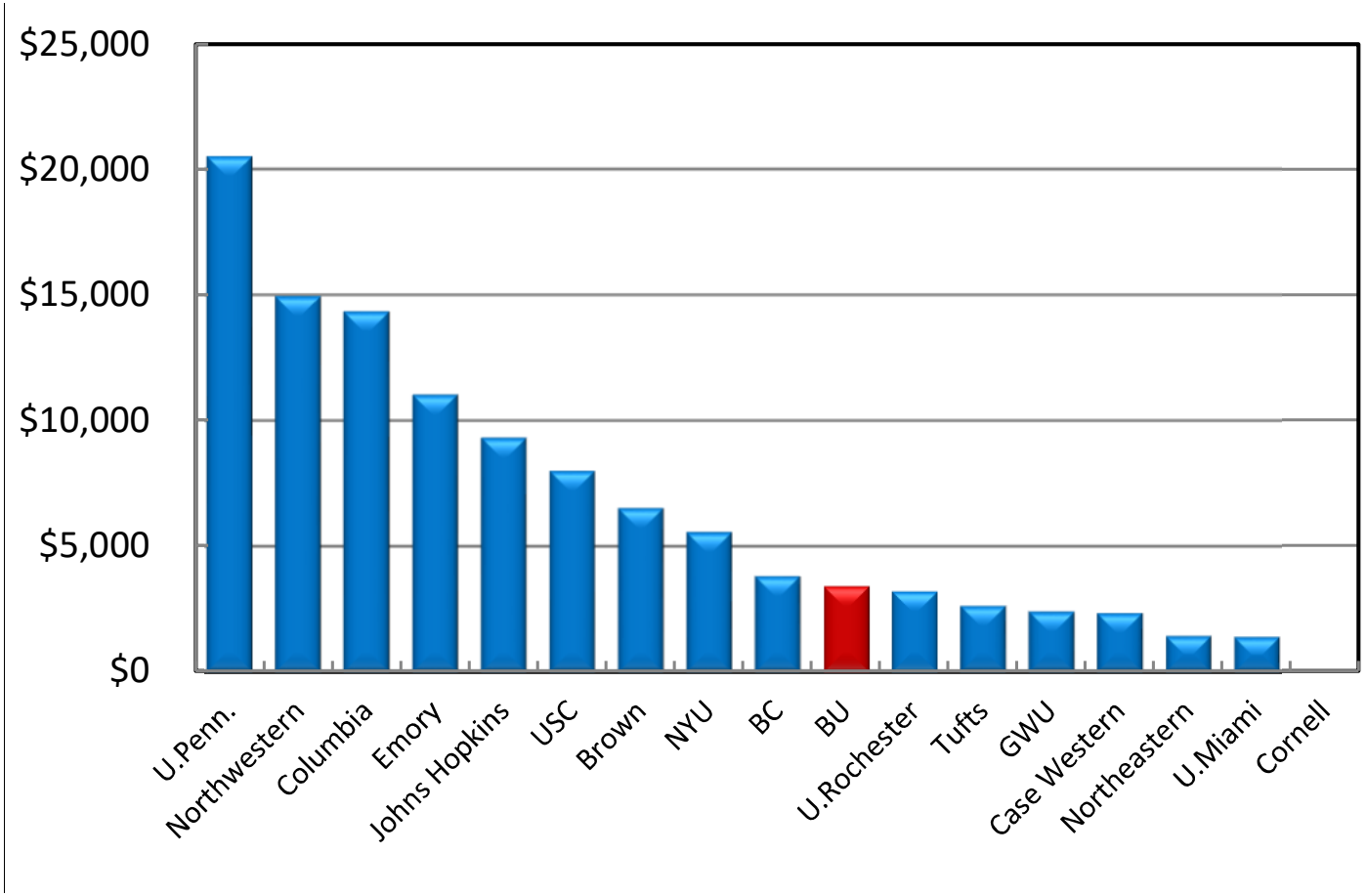
Wide variation in space utilization



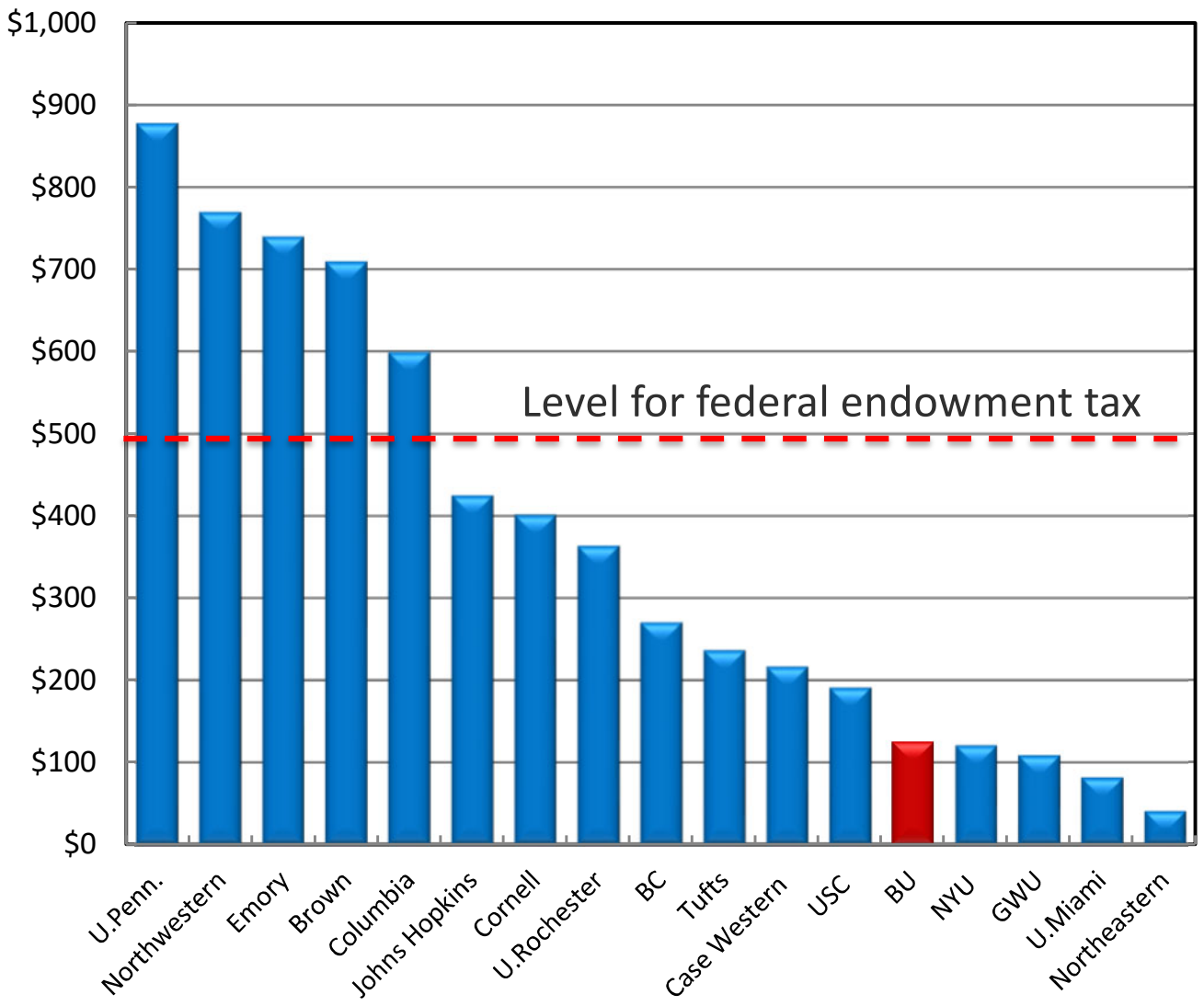
Undergraduate student-to-faculty ratio: FY2021



Endowments of peer universities: June 30, 2021

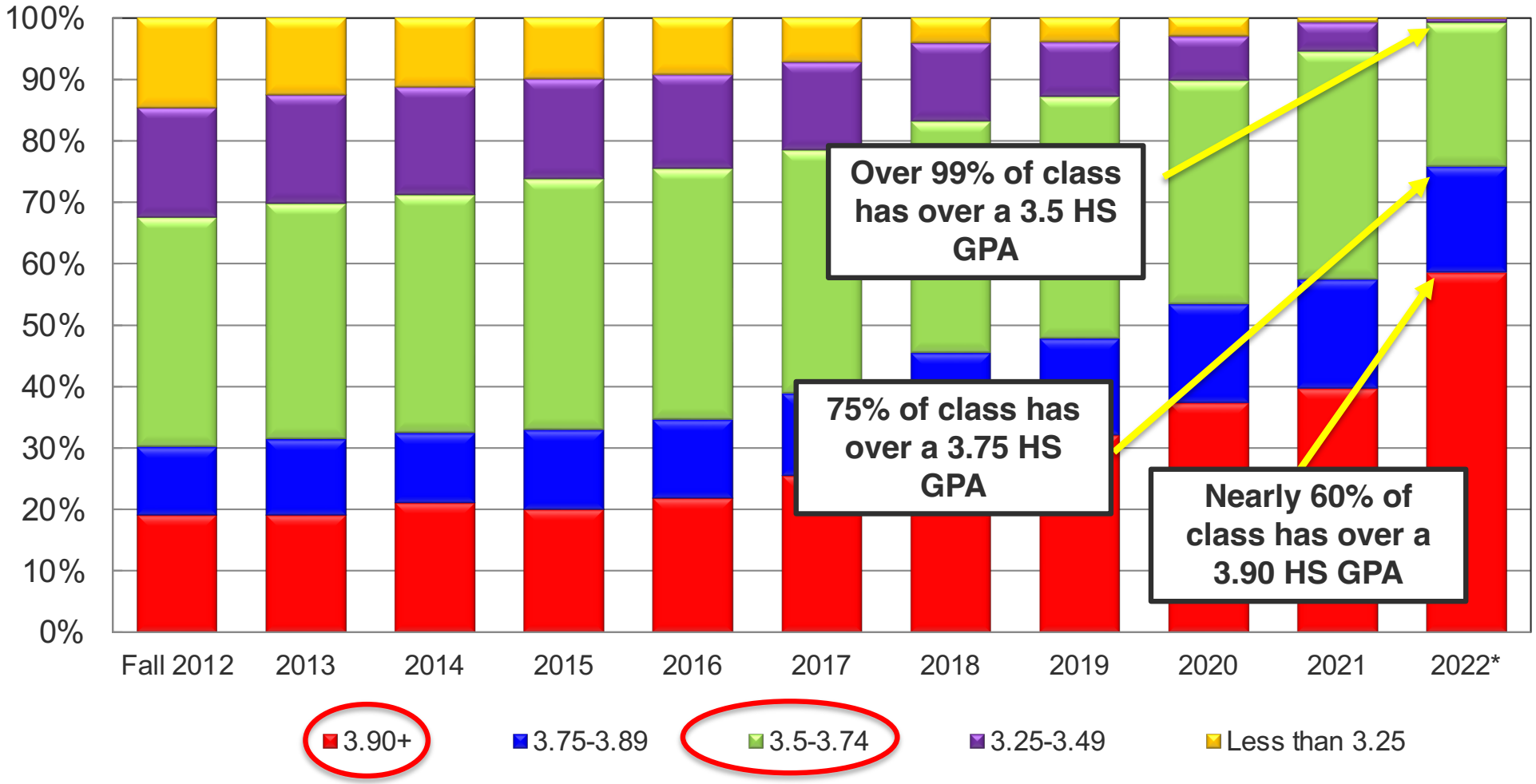


Endowments
Per student for peer universities: June 30, 2021



Underlying BU Data

Increasing academic achievement of freshman class
Fall 2012–2022



Freshman net deposits for fall 2022
33% yield 3.88 GPA 1433 SAT

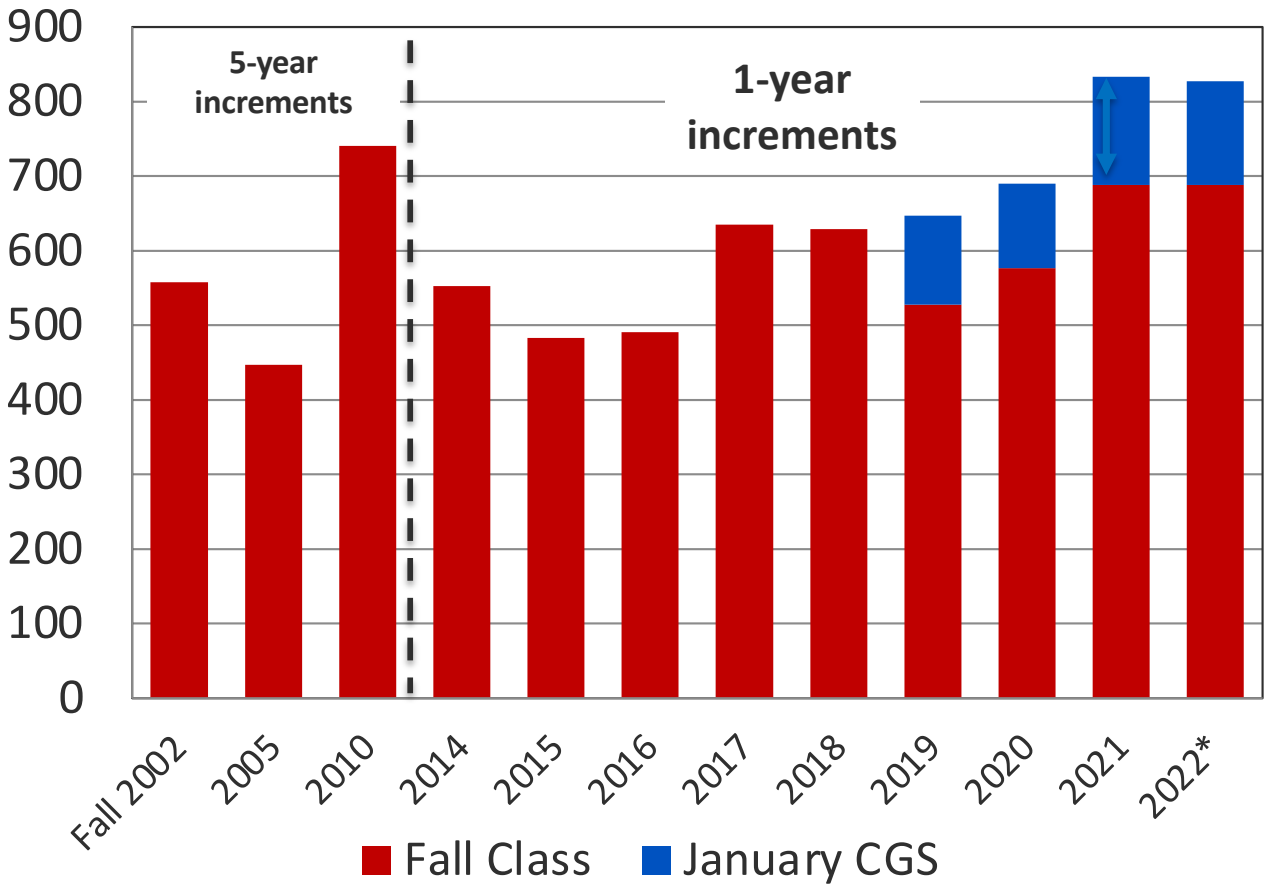
**Fall 2022 Net Deposits as of 8/29/2022*

Number of incoming Pell Grant students in fall and January (CGS) freshman classes: 2002-2022

827 Incoming Pell Grant Students (688 in fall 2022 freshman class)
based on Net Deposits

25% of domestic students

**Fall 2022 Net Deposits as of 8/29/2022*



Note: Fall 2002 placeholder while still looking for Fall 2000 input.

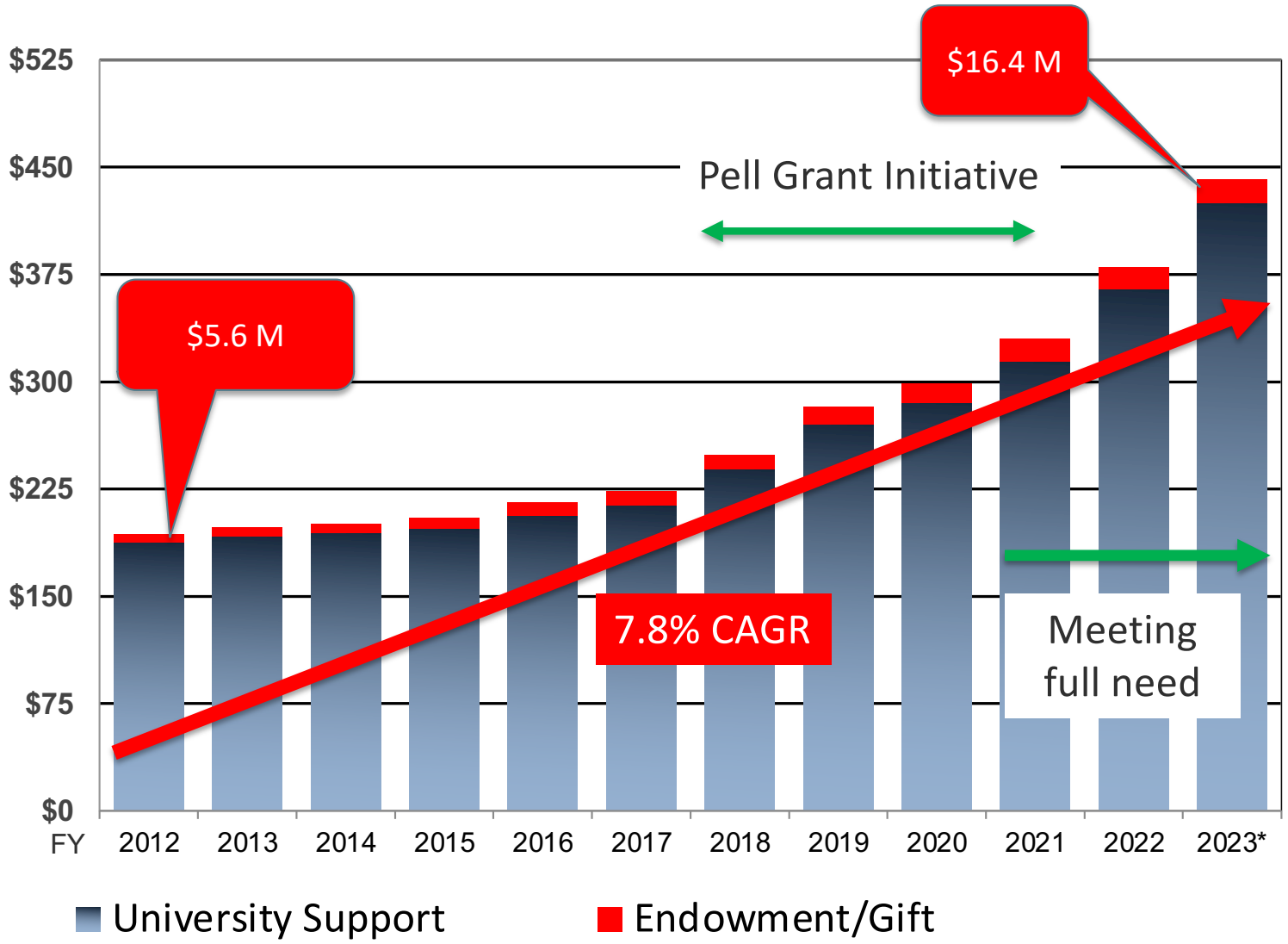
Undergraduate Financial Aid (millions): FY12-FY23*

FY12: $193 M
FY23: $441 M*

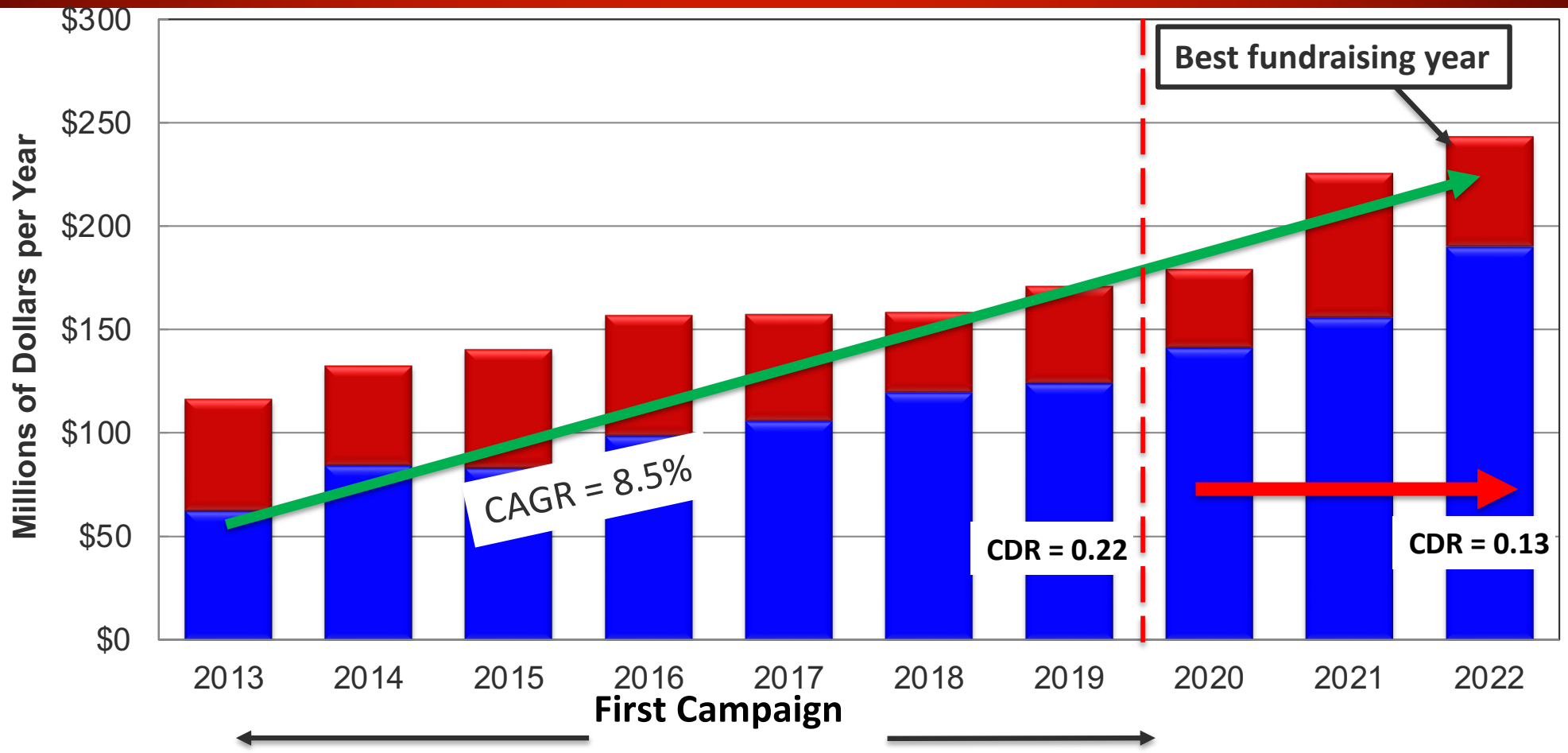
Rapid growth due to implementation of:

- Pell Grant initiative (FY18-21)
- Meeting full need for all first-time domestic students (FY21 – FY23)

Projected FY23



Boston University Philanthropic and Corporate Cash Support
FY2013 - FY2022
Fastest growing revenue stream



BOSTON UNIVERSITY
Office of the President

CDR = Cost to Dollar Raised