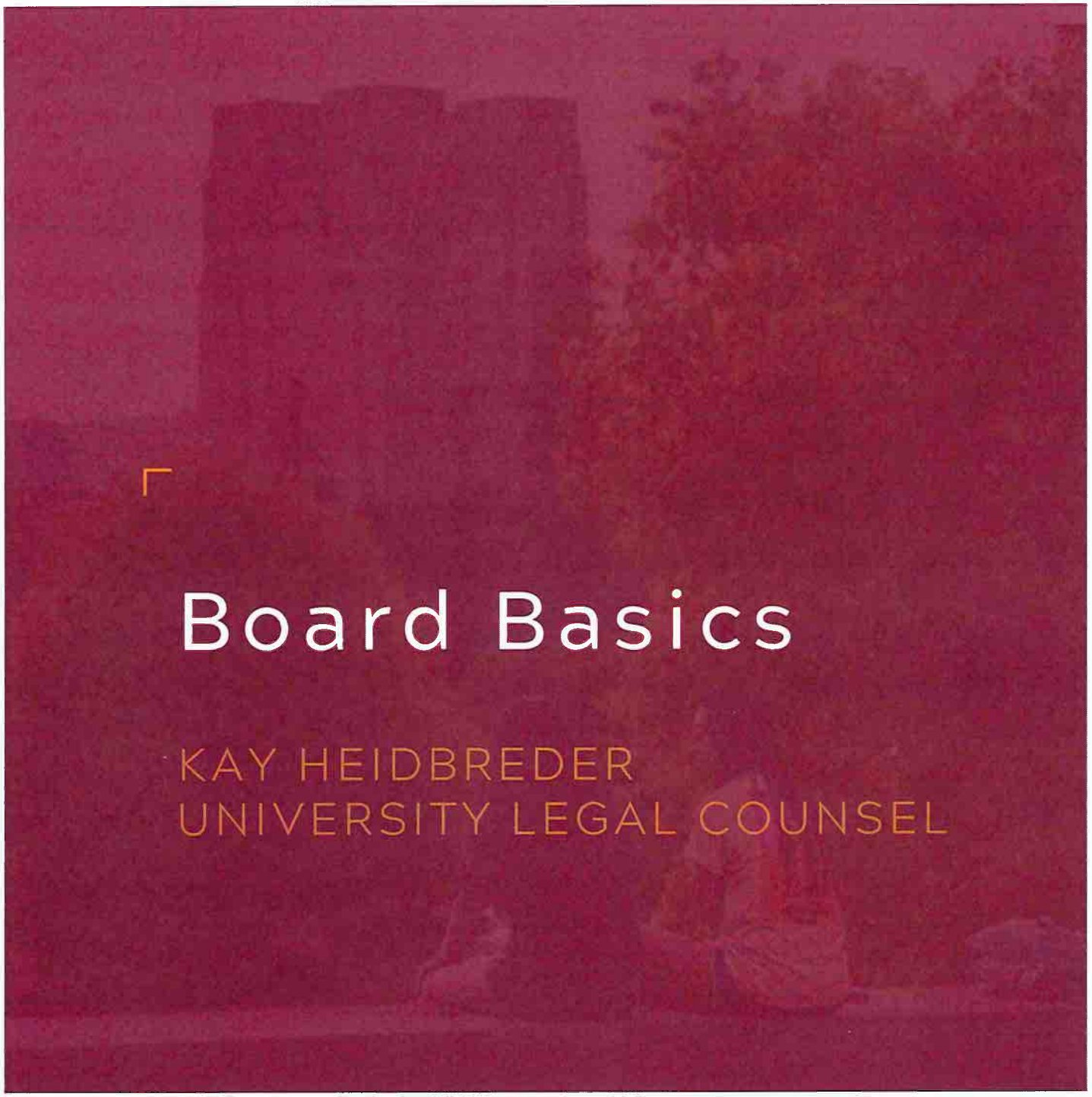
Virginia Tech Board of Visitors Retreat

Agenda

Sunday, August 27, 2023
9:30 a.m. – 5:00 p.m.

W. E. Skelton 4-H Center
775 Hermitage Road
Smith Mountain Lake, Wirtz, Virginia 24184

- Orientation – Legal and Regulatory Responsibilities of the Board
- Opening Remarks by Rector Baine and President Sands
- Discussion of Generative Artificial Intelligence and Implications for Higher Education and Virginia Tech
- Session I – Top 100 Global Research University
- Session II – The Virginia Tech Advantage (Access, Affordability, and Student Success)



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Legal Framework for Public Institutions

- Article VII of the Virginia Constitution
- Enabling legislation (Va. Code § 23.1-2600 et seq.)
- Title 23.1 of the Code of Virginia
  - Statutorily assigned powers and duties
  - Coordination by State Council of Higher Education (SCHEV)
- Restructuring Act/ Management Agreement

External Regulation

- **Federal Government**
  - U.S. DOE laws and regulations (Title IX, Clery, FERPA)
  - Financial Aid Participation Agreement
  - Grants Administrations (NSF, NEA)
- **Accreditation by SACSCOC**

Board Directives

The Board exercises its authority through collective action:

- Majority vote
- Open Session- Freedom of Information Act requirement
- Quorum Present

Freedom of Information Act

Government in the Sunshine

Board Meetings

FOIA Requirements:

- All meetings open to the public
- 3 members discussing institutional business constitutes a meeting
- Do not hit reply all on emails
- 3 day public notice must be provided
- Minutes must be taken
- Closed sessions allowed under very limited circumstances
- Public streaming of official meeting of full board

Board Records

- Default is that all records created by Board members in the transaction of public business are accessible under FOIA.
- Application of exemptions determined at the institutional level
  - Virginia Tech has a statutorily required FOIA officer
- Members are not required to create records, but once created, records must be maintained according to the Public Records Act
- Caution smartphone, texts, meeting notes, etc. are board records

Conflict of Interests Act

- Prevent accrual of personal financial interest of $ 5,000 or more
  - Members are prohibited from contracting with Virginia Tech
- Avoid appearance of impropriety
- Opportunity for opinion from Ethics Advisory Council or Attorney General

Conflict of Interests Act

Compliance Requirements

- Training to be completed within 2 months of assuming office and every 2 years thereafter
- Filing of disclosure forms upon assuming office and every February 1 thereafter

Relationship with the Virginia Tech Foundation

- VTF is an independent 501C Foundation
- Mission of VTF is to support the University, but no University control
- VTF is governed by an independent Board of Directors
- While Virginia Tech has ex officio members on the Board of Directors, no other Virginia Tech control
- *Transparent GMU v. George Mason University* Virginia Supreme Court upheld the ability of George Mason University to operate outside the bounds of FOIA

Attorney-Client Relationship

- The primary role is to advise the Board and University President on legal issues and the management of legal risk
- Reports provided under privilege in conjunction with regular meetings

Discussion on Generative AI

- **Introduction**
  - **What is Generative AI?**
  - **What is VT doing in this space?**
- **What are the implications for universities and the design of their programs?**
  - **A Thought Scenario**
  - **“Full Stack Human”**
- **Superpowers of the future**
  - **Why range and breadth are superpowers in the AI era**
  - **Institute for Leadership in Technology**

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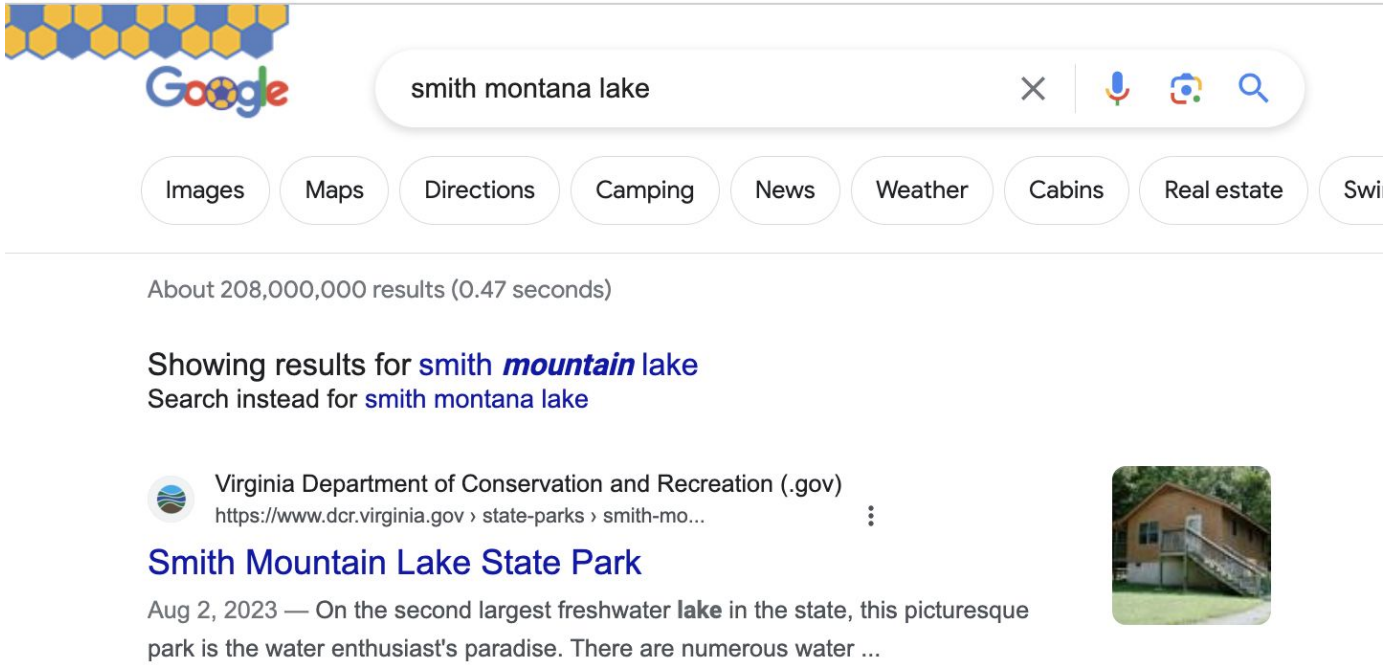
The implications of Generative AI on Virginia Tech's research, education and civic missions are real - and so we are proud to be leading and innovating in and around this field in a manner true to our mission.

Generative AI

- Methods to automatically generate content
  - Large Language Models (ChatGPT), MidJourney, DALLE-2
- Examples of a human acting like an LLM
  - “For breakfast this morning, I had a ____”.
  - “I arrived in Tokyo last night. For breakfast this morning, I had a ____”.
  - “My jaw accident has made it difficult to chew food. I arrived in Tokyo last night. For breakfast this morning, I had a ____”.

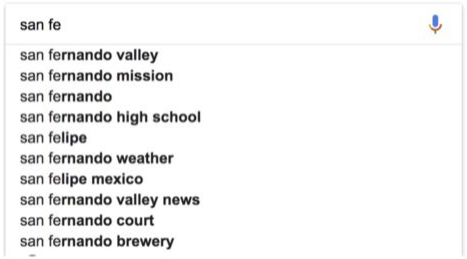
“The unreasonable effectiveness of data”

- **What happens when you make a spelling mistake on Google?**



Ways to think of LLMs

LLM is an auto-completor



LLM is a noisy compressor

o

LLM is Wilson

LLM is a stochastic parrot (courtesy Emily Bender)

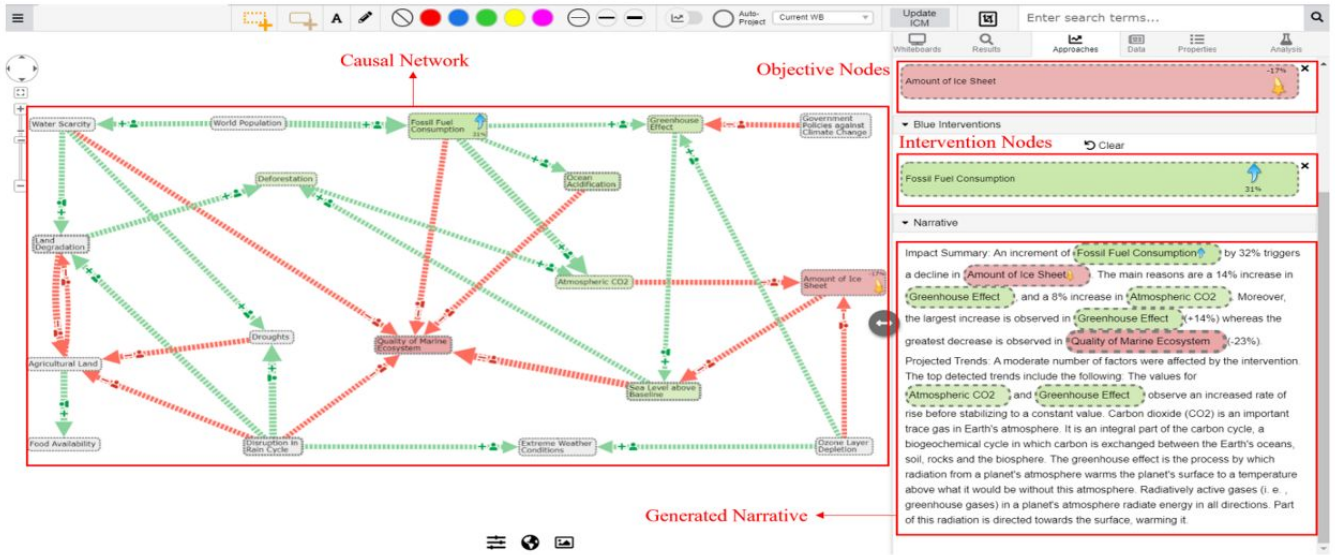
o

LLM is a bluffer

o

Generative AI projects at VT

1. Report generation to support analysts decision making (DARPA)



(a) Screenshot of the CAUSEWORKS system.

Generative AI projects at VT

2. Generative AI for Radiology

Children's National

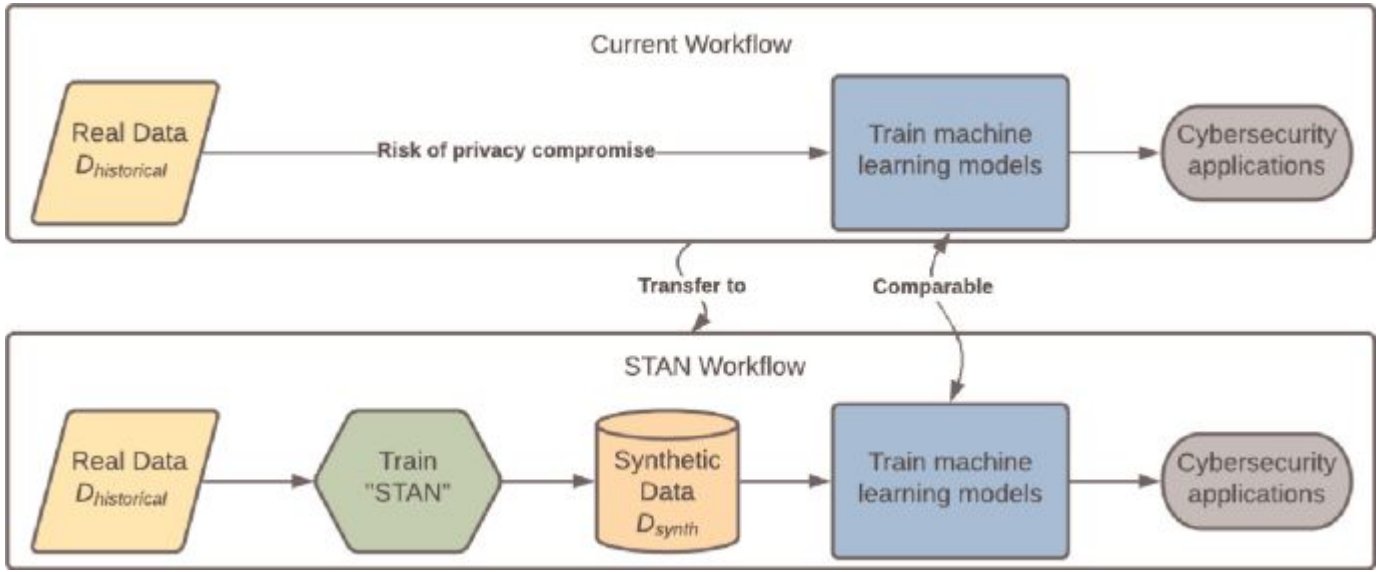
FRALIN BIOMEDICAL RESEARCH INSTITUTE AT VTC
VIRGINIA TECH

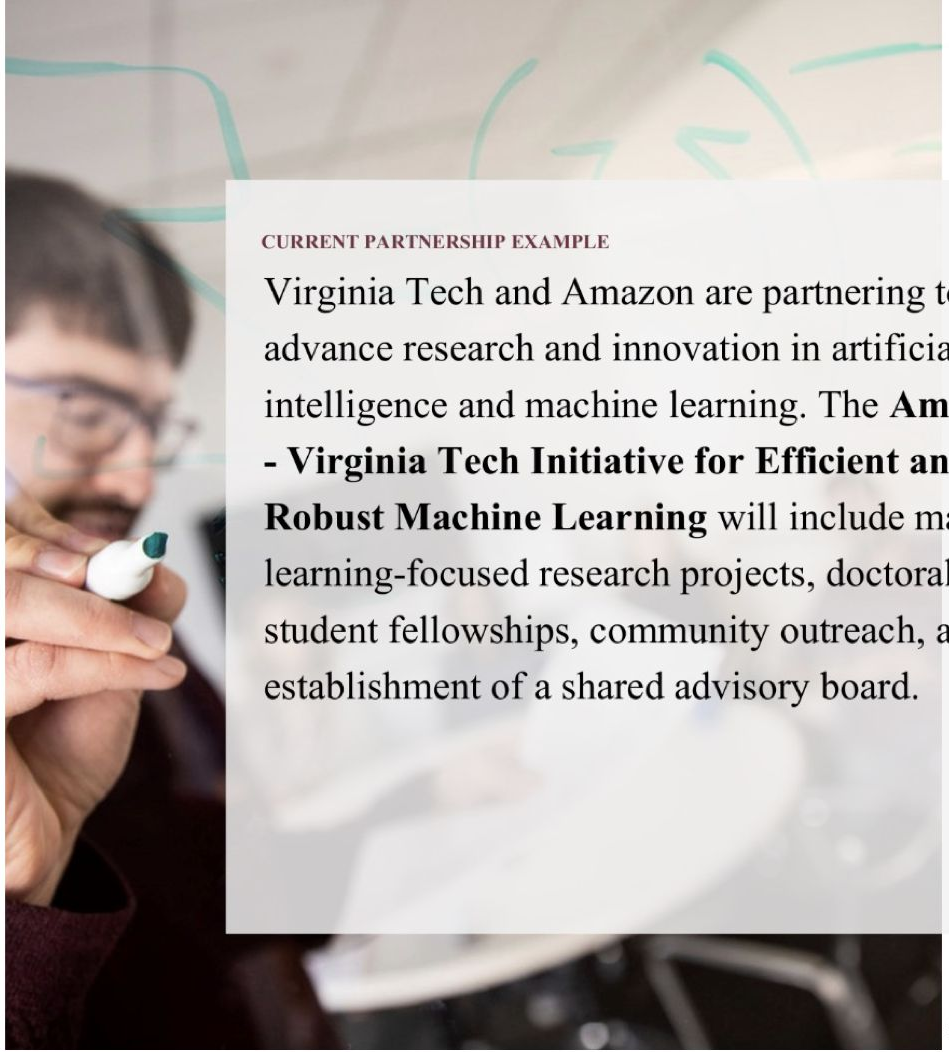
Generative AI can be used to:

- Address instances when real data is scarce about patients with particular criteria/conditions
- Capture a diversity of patient abnormalities, imaging conditions, geography

Generative AI projects at VT

3. Synthetic Data for Cybersecurity analysis (Collaboration between NSI, CCI, and Sanghani Center)





CURRENT PARTNERSHIP EXAMPLE

Virginia Tech and Amazon are partnering to advance research and innovation in artificial intelligence and machine learning. The **Amazon - Virginia Tech Initiative for Efficient and Robust Machine Learning** will include machine learning-focused research projects, doctoral student fellowships, community outreach, and an establishment of a shared advisory board.

> We are delighted to collaborate with Virginia Tech in launching this new initiative which brings together the top talent in our two organizations in a joint mission to achieve ground-breaking advances in robust machine learning."
>
> - Prem Natarajan, Vice President of Alexa AI – Natural Understanding, Amazon

Key Components of the Partnership:

- Shared advisory board (4 + 4)
- Doctoral student fellowships (with summer internships available)
- Deep, embedded ML research projects
  - Paired research groups
  - Lead to joint IP/startups
- Community Outreach

SANGHANI CENTER FOR ARTIFICIAL INTELLIGENCE & DATA ANALYTICS
VIRGINIA TECH

Generative AI projects at VT

4. Conversational AI (Amazon-VT Initiative in Efficient and Robust ML)

Generative AI Risks

- To data consumers
  - Output fictionality, information pollution
  - Information obsolescence
- To data owners
  - Leakage of sensitive/classified information
  - Lack of credit and compensation
- To organizations
  - Gateway to security risks
  - Value inconsistency with company policy, objectives
  - Lack of V&V processes

Generative AI in the classroom

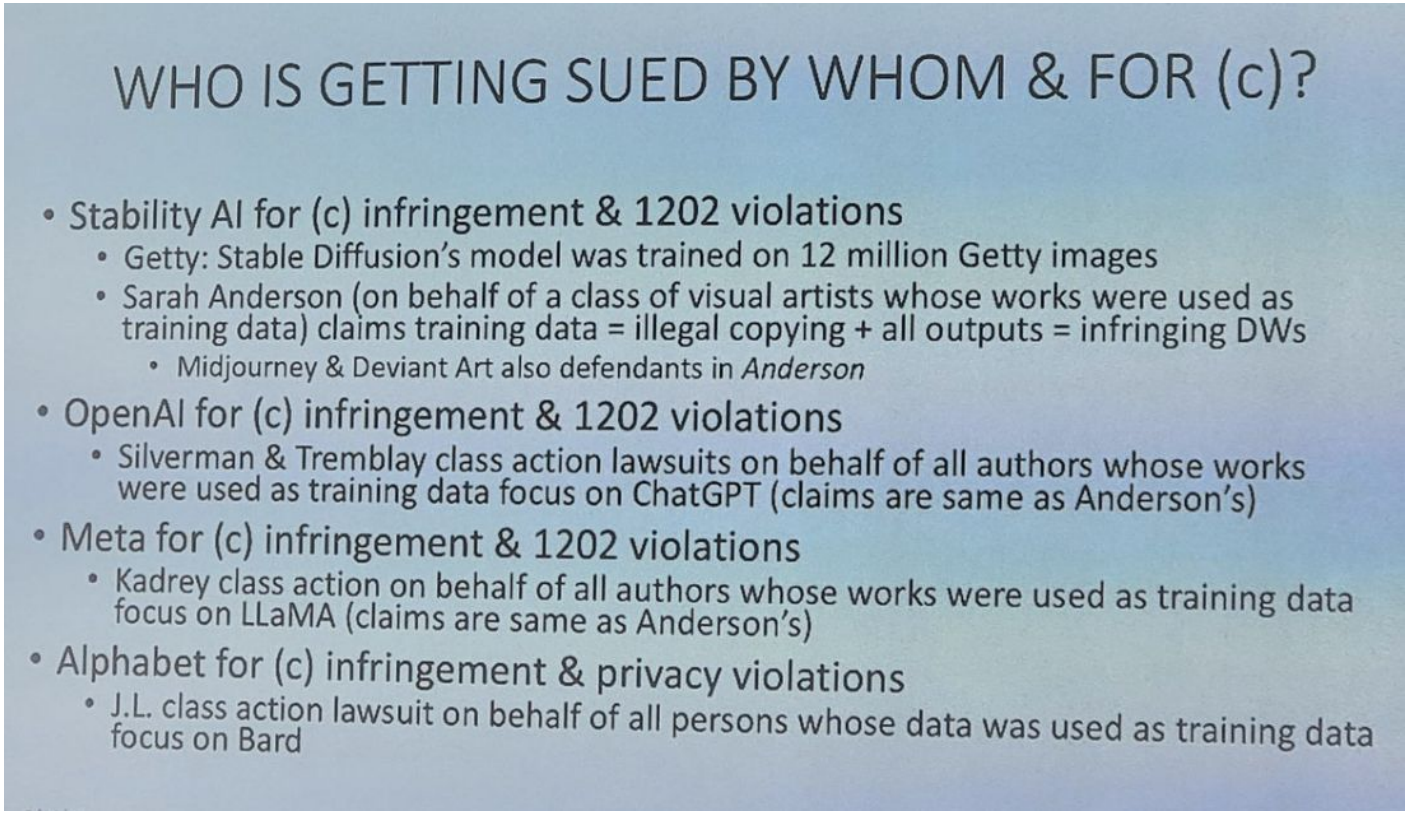
Concerns

- What uses are admissible?
- “Watermarking” AI outputs

Opportunities

- Scaling up personalized delivery
- Rethink educational objectives in light of available tools
- Innovate new paradigms of knowledge workers

The long arm of the law is still playing catchup



(slide presented by Pamuela Samelson, UC Berkeley)

Courses @ the Sanghani Center

In addition to the usual fare

- Artificial Intelligence
- Deep Learning
- Natural Language Processing
- Language Models

we emphasize

- Human-AI Collaboration and Teaming
- Ethics and Professionalism in AI/Data Science

Unpacking a GenAI application

Technology is not a monolith

Example: AI Avatar Generation

- Permissioning of private data/photos (social contract theory)
- Use of public LLMs / Privacy issues
- Data sovereignty (international law)
- Intellectual Property (likeness of image, reuse)
- Bias in image generation (moral philosophy)

This is a fairly innocuous example. Now imagine DNA, SCADA systems for critical infrastructure, Internet of Things, connected medical devices, predictive policing with historic crime data, cyber security.

A memorable scenario

- On board the USS Blue Ridge in the South China Sea
  - US Navy's Seventh Fleet command, responsible for fleet of 80 vessels
  - Andres Xenachis on "watch floor," C4I, responsible
  - HYSY 981 deep-sea drilling rig into Vietnamese EEZ
- Navy War College
  - War Games, "red teaming," or "force on force"
  - Multi-day, in-person, Jungian, experience creating consciousness
  - Finding Unknown Unknowns, human error
- Special Operations Command (SOCOM):
  - "Humans are more important than hardware. People – not equipment – make the critical difference. The right people, highly trained and working as a team, will accomplish the mission with the equipment available. On the other hand, the best equipment in the world cannot compensate for a lack of the right people."

ATTACHMENT D

Drew Faust at West Point

- Harvard president Drew Faust to 800 Cadets:
  - The Humanities "...teach us how to scrutinize the thing at hand, even in the thick dust of danger or drama or disorienting strangeness. It imparts skills that slow us down –the habit of deliberation, the critical eye, skills that give us capacity to interpret and judge human problems; the concentration that yields meaning in a world that is noisy with information, confusion, and change. The humanities teach us many things, not least of which is empathy– how we see ourselves inside another person's experience."
- Internalize this reflection today
  - We are the stewards of our own conversations and internal debates, and how we choose to guide them toward hope, rather than fear, a the future we create

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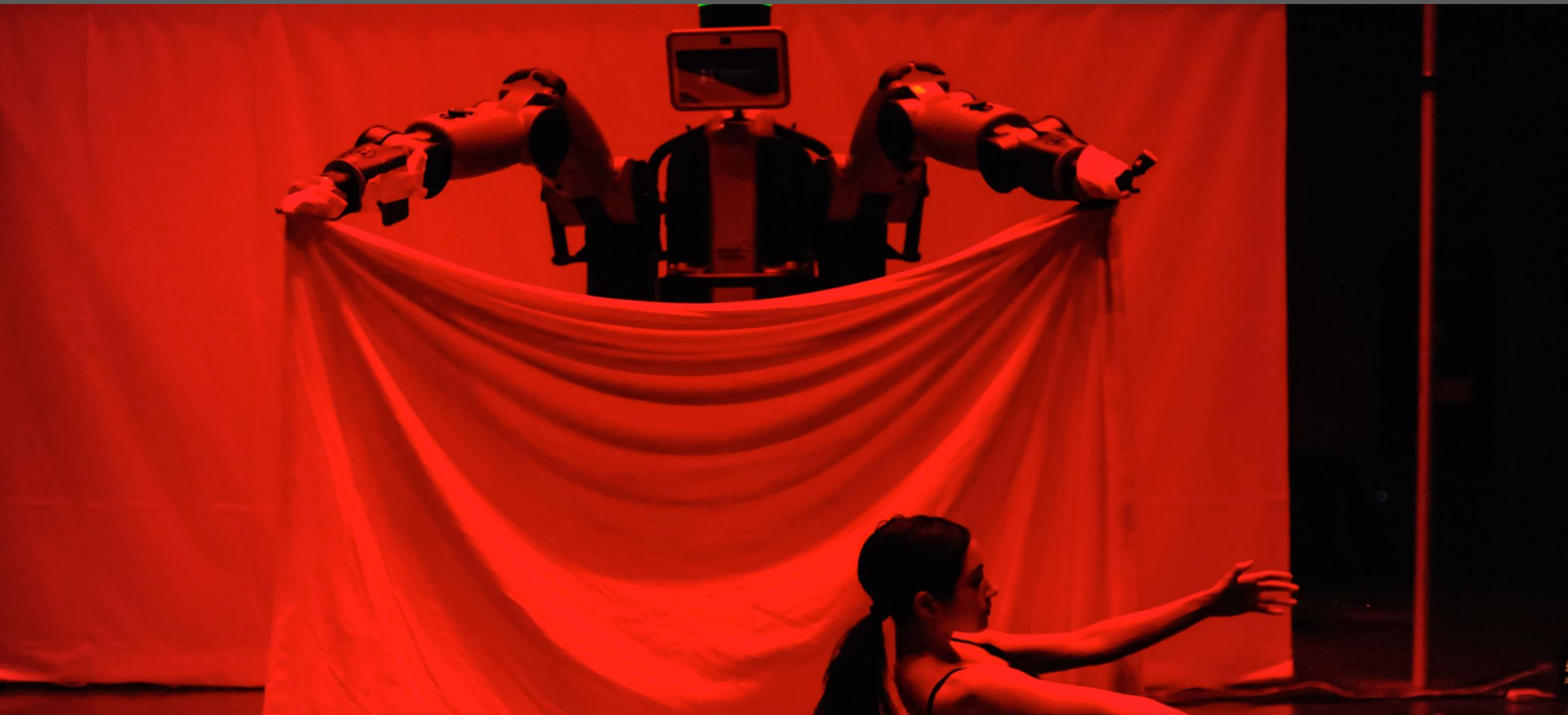
Anthropology, not Tech

Ballet, not Robotics



Philosophy, not Entrepreneurship

"Studying philosophy taught me two things... I learned how to write really clearly. I learned how to follow an argument all the way down, which is invaluable in running meetings."

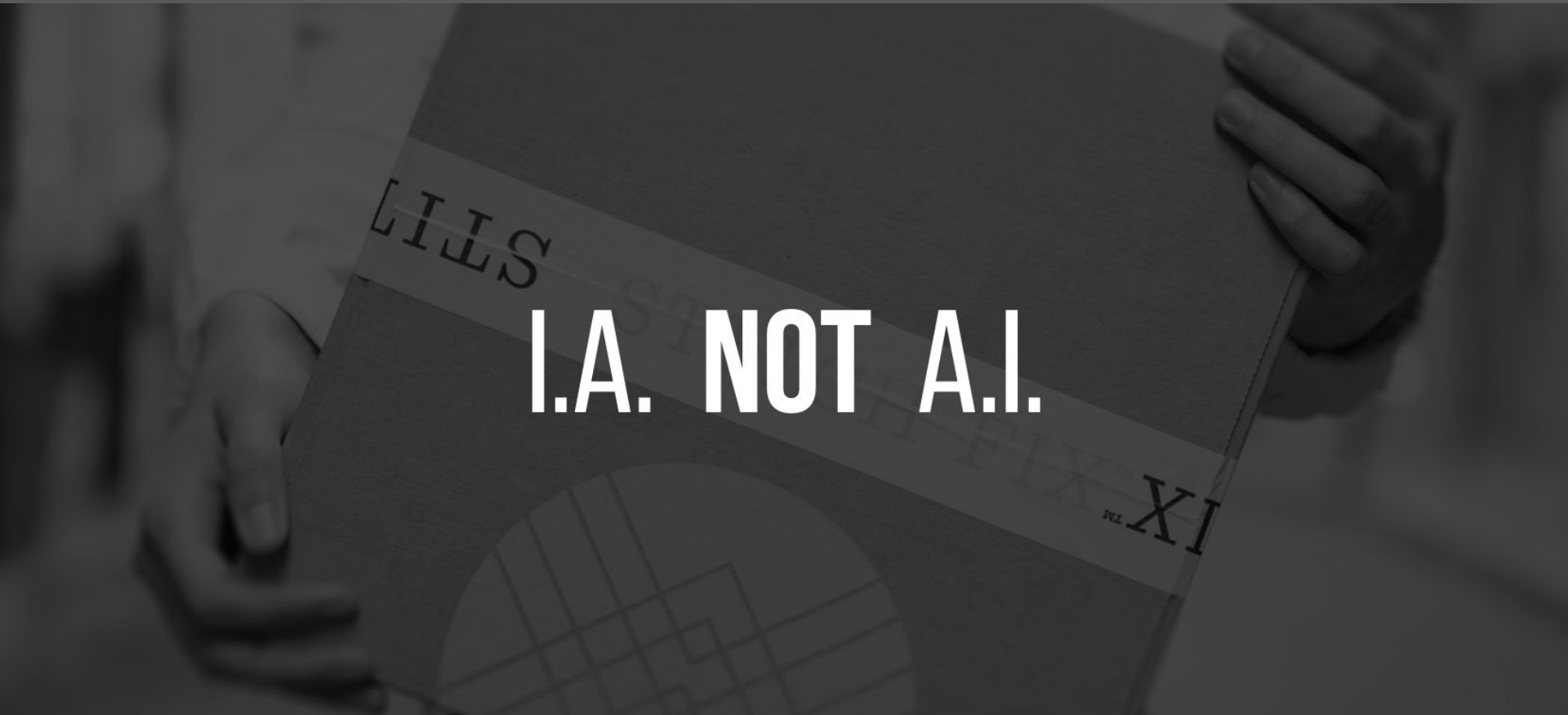
- STEWART BUTTERFIELD, CEO SLACK

Becoming Socratic with Machines

DATA < KNOWLEDGE < WISDOM

- PLATO

Intelligence Amplification (IA)



Already True in Silicon Valley

CEO YouTube = **History & Literature**

COO Facebook = **Economics**

CEO Pinterest = **Political Science**

Founder Airbnb = **Art & Design**

Founder LinkedIn = **Philosophy**

Founder Paypal = **Philosophy**

CEO Slack = **Philosophy**

Founder AOL = **History**

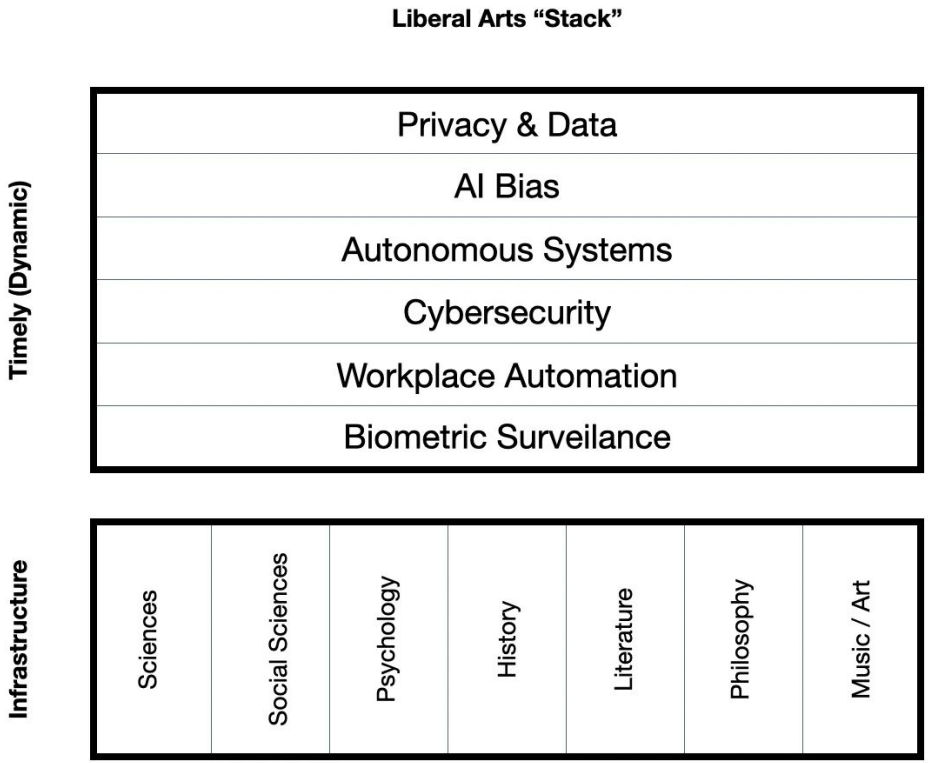
Founder Reddit = **History**

CEO Palantir = **Social Theory**

CEO Alibaba = **English**

Founder Salesforce = **English**

Full Stack Human



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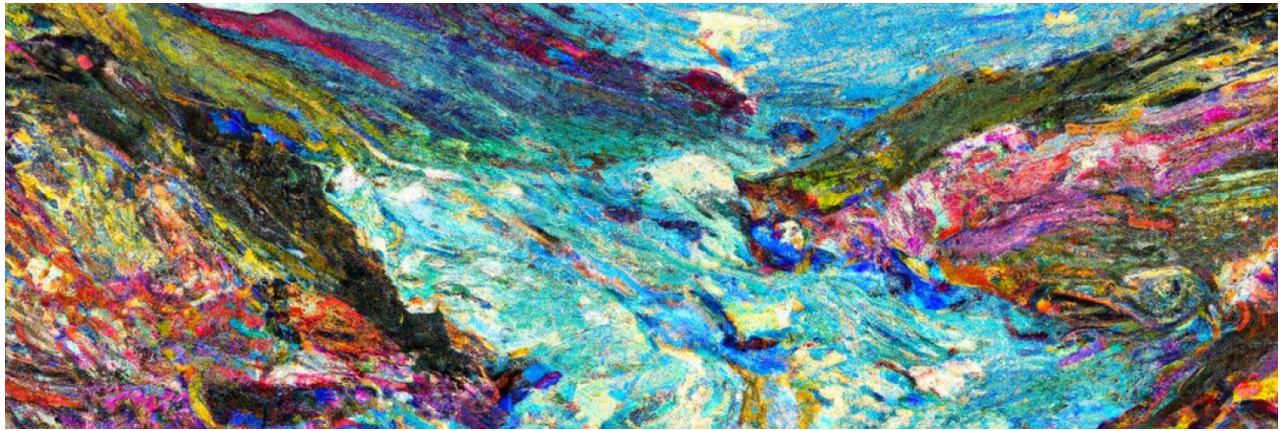
What's the superpower of the future?

And how might Virginia Tech ensure this notion of a "Full Stack Human" is within the reach of all?



In a world in which computing-and-commercial skills are increasingly within reach, human sensibilities are breakthrough - and build longevity for people, products and policy.

ATTACHMENT D

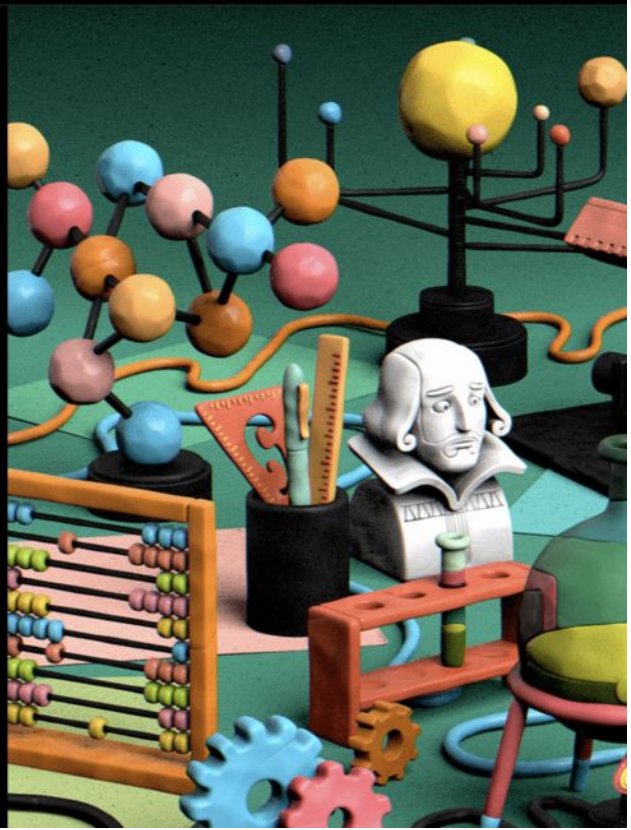
ANNALS OF HIGHER EDUCATION MARCH 6, 2023 ISSUE

THE END OF THE ENGLISH MAJOR

Enrollment in the humanities is in free fall at colleges around the country. What happened?

By Nathan Heller

February 27, 2023



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"There are people in their thirties and forties who have been stay-at-home parents, or they work. And they are committed to the humanities - they have an idea about the value of liberal-arts education…it's a matter of life experience.

What someone who has been in the grind of life wants to learn more isn't necessarily linear algebra.

Career studies have shown that humanities majors, with their communication and analytical skills, often end up in leadership jobs. To that extent, the value of the educated human touch is likely to hold in a storm of technological and cultural change."

The New Yorker, March 6, 2023

The Economist

Business | Schumpeter

What the world's hottest MBA courses reveal about 21st-century business

Students seek hardheadedness, self-awareness and tact

Brett Ryder

"Management education involves wading through case studies, poring over financial statements and building sophisticated spreadsheets.

And, like any MBA curriculum worth its salt, the GSB's has compulsory classes in accounting, finance and computer modelling, to be completed within the first two terms of instructions, out of a total of six.

Look at the school's three most popular facultative courses, though, and a more interesting picture emerges of the 21st-century manager. All three require virtually no number-crunching.

Instead they aim to cultivate in students a capacity for hardheadedness, introspection and diplomacy, respectively. It is these attributes, the students appear to be saying, rather than any technical expertises, that will determine success."

The Economist, April 8th, 2023

INSTITUTE FOR LEADERSHIP IN TECHNOLOGY

VIRGINIA TECH

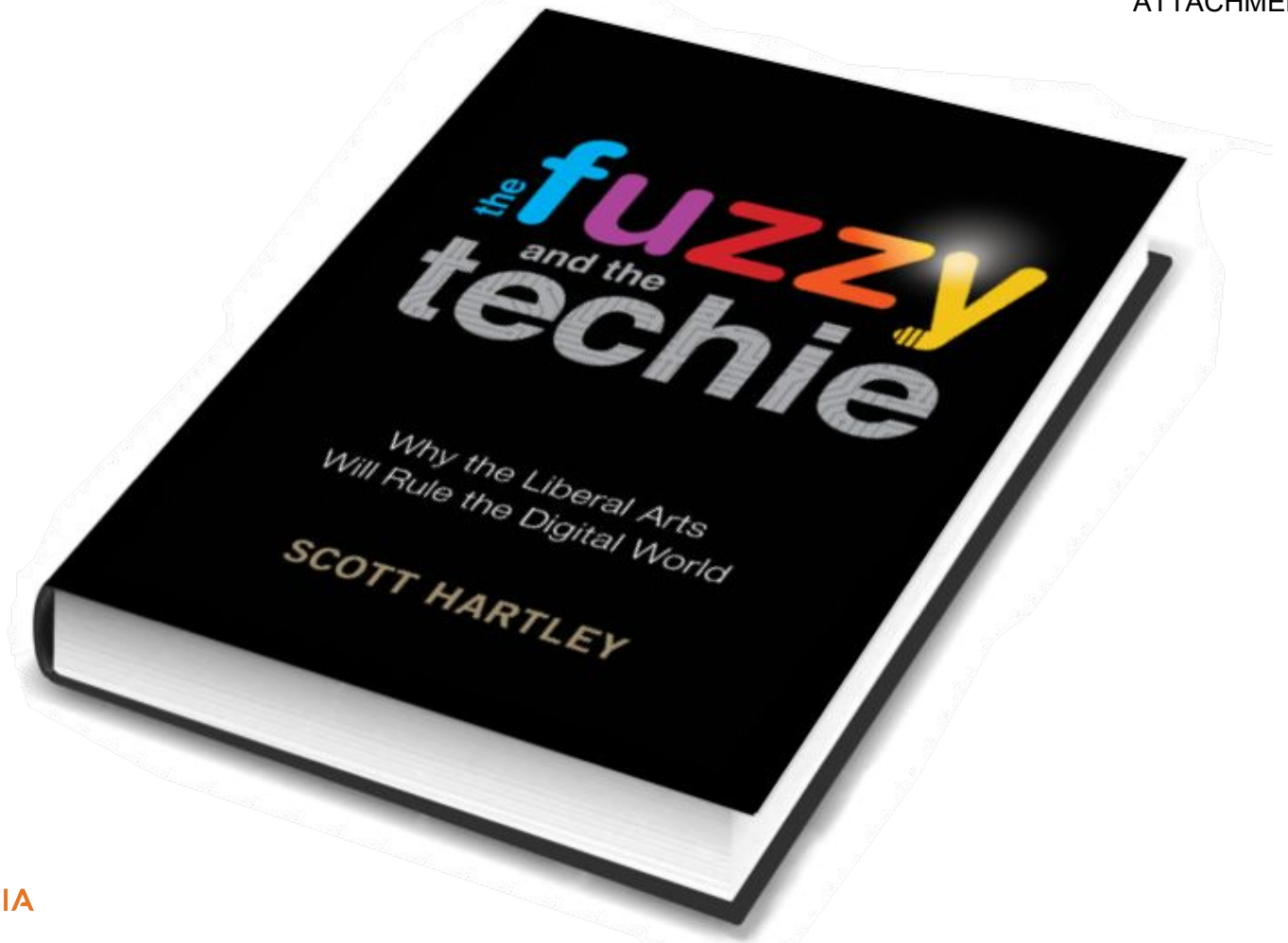
ADVANCING A NEW KIND OF LEADERSHIP LITERACY

WHAT'S THE SUPERPOWER OF THE FUTURE? OUR ANSWER: ***THE HUMANITIES***

Welcome to the Virginia Tech Institute for Leadership in Technology, where we offer a one-year, low-residency fellowship to a select group of rising leaders from around the world each year. The experience, geared for mid-career professionals from across sectors and around the world, culminates in an Executive Leadership Certificate from Virginia Tech - a credential grounded in the liberal arts and humanities. Welcome to a new kind of leadership literacy for entrepreneurs, executives and evangelists in and around the technology landscape.

READY TO LEARN MORE?

WHY VIRGINIA TECH?



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Hokies Have	Undisputed Technical Heritage
Hokies Are	Local Souls with Global Goals
Hokies Believe	*That We May Serve* Humanity
Hokies Can	Move Fast and Entrepreneurially
Hokies Live	In a Fuzzy & Techie Commonwealth
Virginia Tech Is	A Pioneering Global Land Grant

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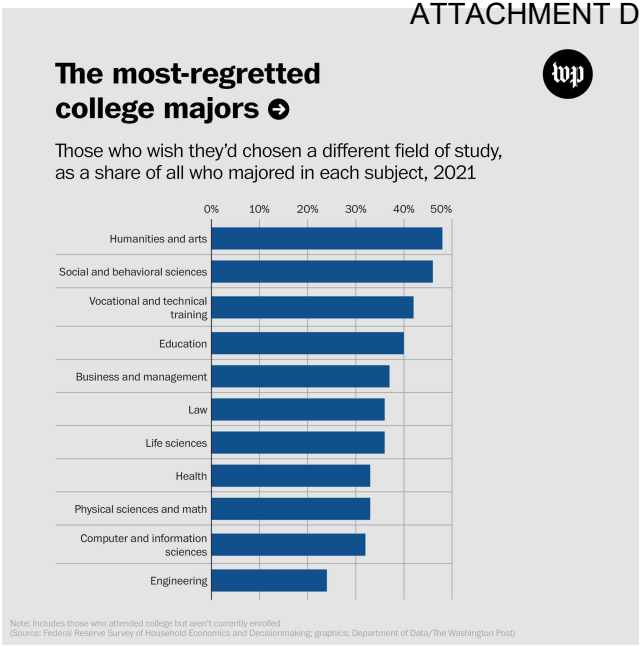
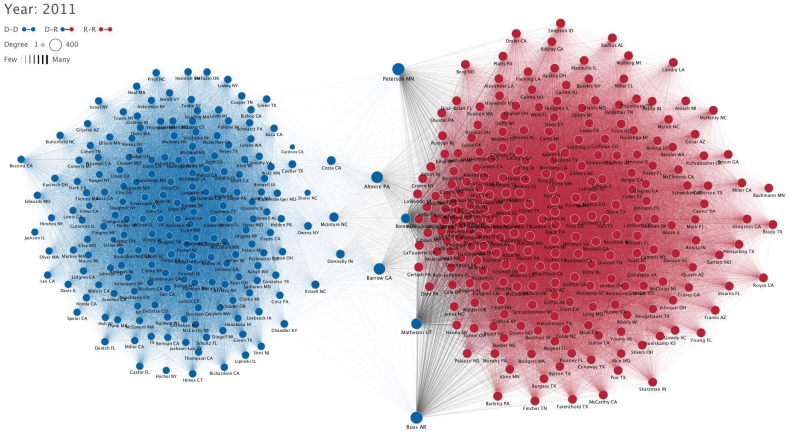
WHY TECHNOLOGY?





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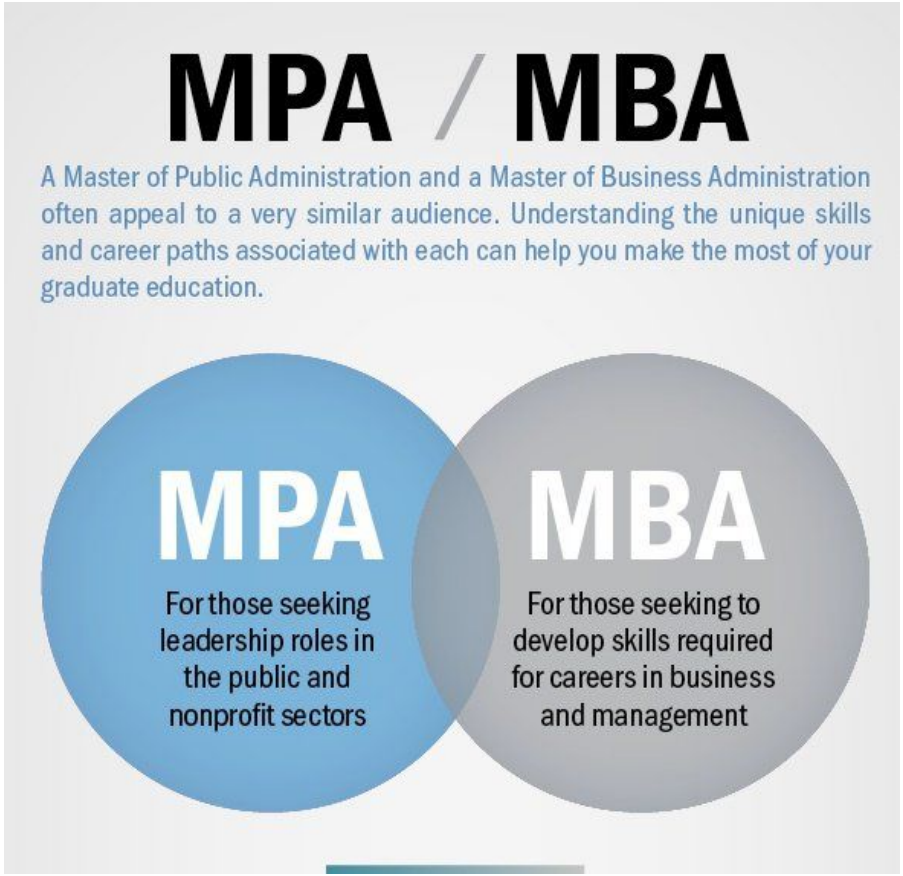
WHY LEADERSHIP?



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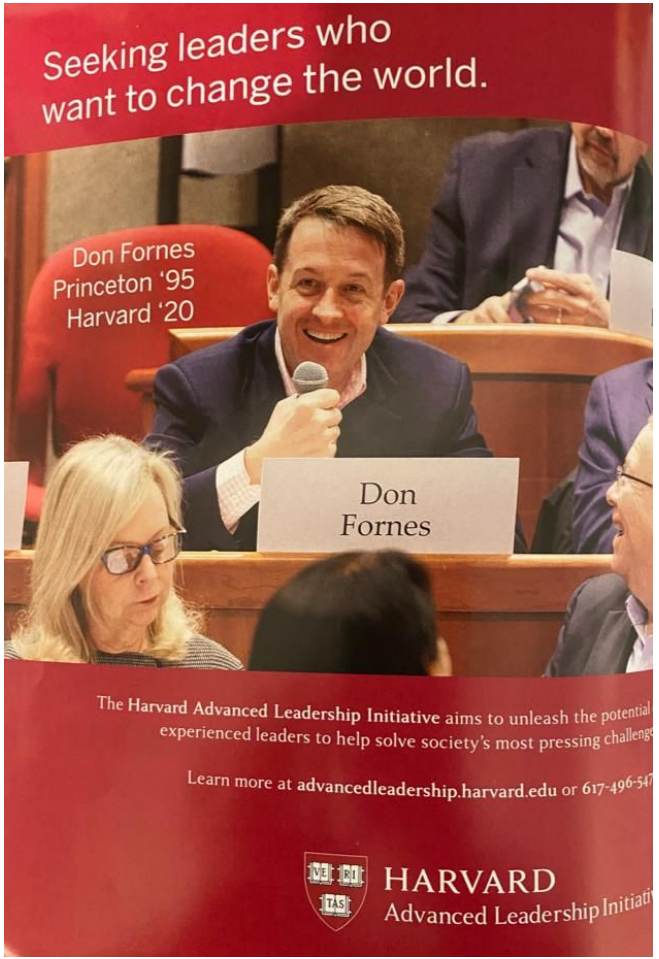
PAMPLIN COLLEGE OF BUSINESS

Pamplin College of Business / Academics / Executive Education

EXECUTIVE EDUCATION AT PAMPLIN

The speed of business is the speed of change. Changing technologies, evolving competition, dynamic market demands, and other external factors force organizations to stay smart.



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IT’S THE PEOPLE, SILLY ☺

AND WHY THE HUMANITIES?


David Brooks
@nytdavidbrooks
Want to thrive in an AI world? Major in the humanities.
nytimes.com
Opinion | In the Age of A.I., Major in Being Human
How to acquire the skills no machine can have.

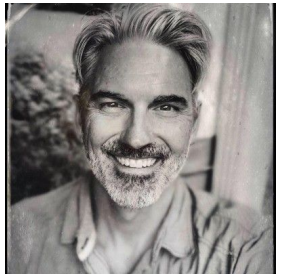
MISSION

To realize a world in which emerging and established leaders in technology draw on the power of the humanities in service of a higher stewardship.

In so doing, Virginia Tech will bring to life a new approach to higher learning that will inspire innovation across higher education.

FELLOWSHIP









Bryan

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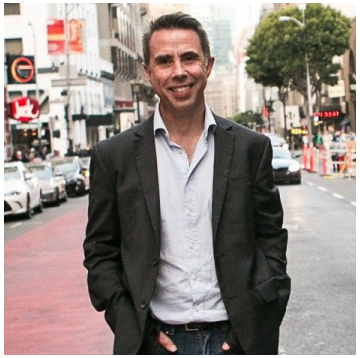
ATTACHMENT D





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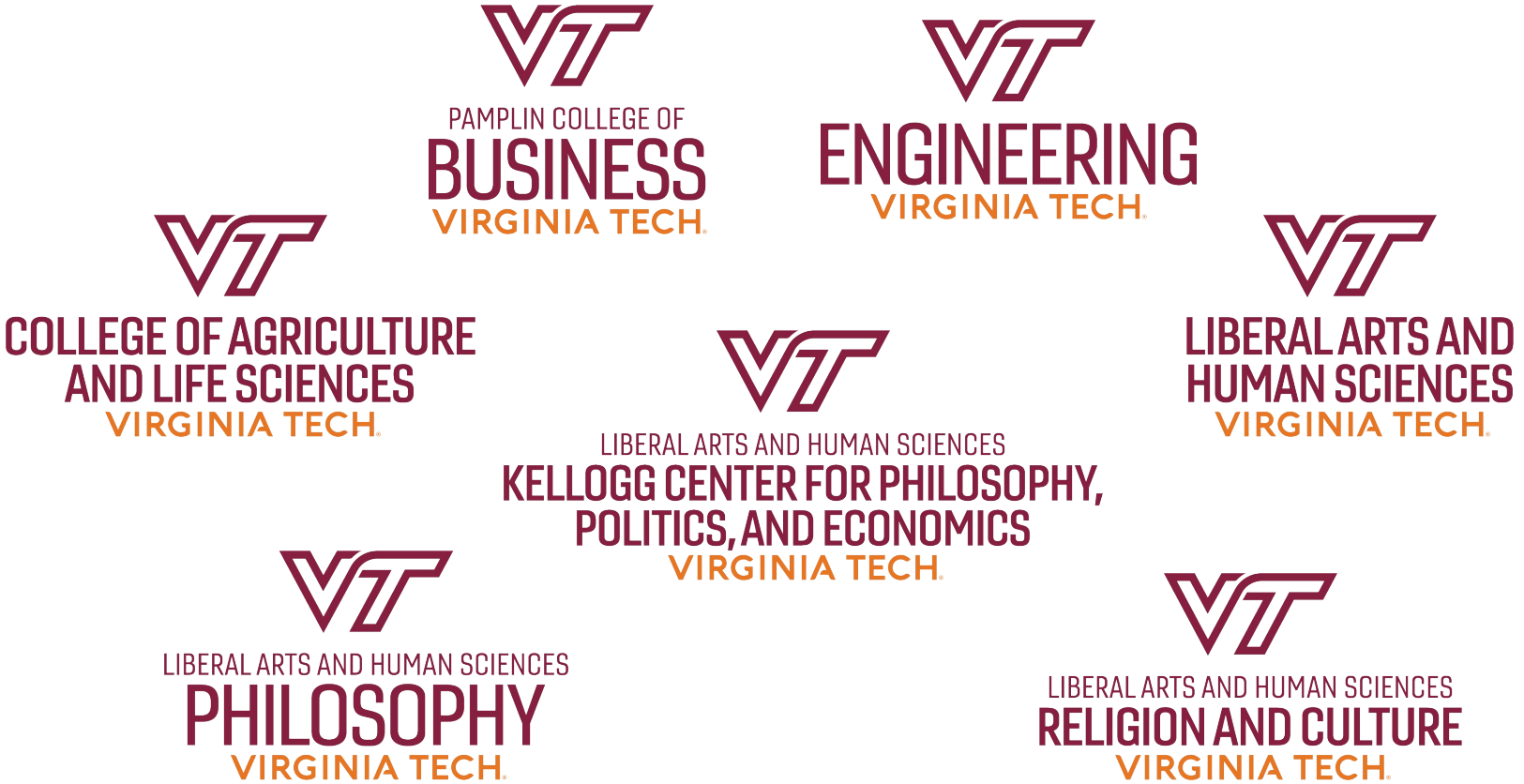
CURRICULUM AND COMMUNITY



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Religion and Development: The role of faith-based institutions in socioeconomic development

Philosophy and Code: A review of global philosophy and its role in shaping what we code

The Economics of Small Things: Shining a surprising, economic light on our daily lives

Introspective Fiction: A journey with the most memorable characters in American fictional history

Environmental Morality: An examination of the most difficult moral dilemmas in climate advocacy

The Far (Eastern) Reaches of Western Civilization: An inclusive, and global, examination of classics

Additional VT Strengths: Military/CW History, Electrical, Computer, Civil Engineering, Arts/Architecture

October Seminar

"The Humanities and a Higher Leadership"

Instructor: Professor Rishi Jaitly

How has society's sense of what makes a good leader evolved over time and place? What role have the liberal arts played in shaping leaders we admire across contexts and communities? And what role might the humanities play in advancing a higher form of leadership in our era's technology landscape? This seminar will consist of a review of leadership as it has been understood, cultivated and practiced over time - and will feature contemporary case studies and guest speakers from the technology industry.

November Seminar

"Ancient Texts and Tales"

Instructor: Professor Sylvester Johnson

In what ways, both seen and unseen, does the expanding Western canon shape our society today? What are its limits? And at the level of faith, values and culture, what classical works from the East undergird today's leading societies of the non-Western world? This seminar entails a review of Western philosophy, an examination of the interplay between Judeo-Christian and Eastern Civilizations and a reflection on the ensuing role religion and culture have long played in social and economic development.

December Independent Paper

Prompt:
Drawing on the history we studied in our first semester together, select an episode - whether it occurred millennia or months ago - that particularly enthralled you with awe and wonder. Reflect on the nature of human leadership that manifested in this chosen context. And using the skills and sensibilities that emanate from the humanities as a guidepost, analyze and assess the leadership that surfaced in this historic moment and make an inspired argument for what an even higher kind of human stewardship might have looked like.

February Seminar

"Stories Make the World Go Round"

Instructor: Jonathan Harley

What is it about stories that have captivated the human spirit across time and place? What are the hallmarks of a compelling narrative across media types - written, oral and digital? And what is the relationship between storytelling and leadership? This module is a study - but also a skill-building seminar - centered on examining the power of storytelling in a range of human contexts: from mythmaking and movement building to motion pictures and moral debates.

March Seminar

High Humanities, High Technology

Instructor: Scott Hartley

Who are the people - the founders, the executives, the humans - that have shaped the inescapable technology landscape we live in today? What skills, sensibilities - and, indeed, superpowers - have they accumulated in their lives that have allowed them to imagine and innovate? And, looking ahead, are poets or programmers more likely to be best equipped to thrive in the world's high-technology ecosystems? Inspired by Hartley's book "The Fuzzy and the Techie," this seminar entails a review of the essential role the liberal arts have long played in shaping our technology landscape in Silicon Valley and beyond - and the "full-stack" superpower role they're poised to play looking ahead.

April Creative Work

Prompt:
Drawing on what we've learned - and practiced - together during this second semester together relating to the skills of storytelling and the superpower of being a "full-stack" humanist, produce a significant creative work that makes you proud. Whether poetry or prose, a play or portrait, be sure to work with faculty to lean into the very best of what the humanities do to us: that is, they compel us, and help us confront, all kinds of human others with awe and wonder. In so doing, they produce in us a higher power of sensitivity, storytelling and stewardship. Work independently or with your classmates as you see fit.

2023 - 2024

April 26: VT LIT Public Announcement

August 15: Finalized Initial Class of Fellows

September 19-21: Blacksburg Ignition Experience

January 23-25: Off Campus Immersion Trip

April 23-25: Northern VA Capstone and Conferral

#ThatIMayServe

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#VTLIT

ATTACHMENT D

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Times Higher Education (THE) Top 100 World Rankings Goal

Cyril R. Clarke

August 2023

Rankings used as Proxy for Assessing Strategic Progress

THE World University Rankings

#251-300 out of 1,799 ranked institutions

#16 (tied) among land-grants

THE Impact Rankings

#92 out of 1,591 ranked institutions

Top 20 Carnegie Class -Very High Research, public land-grant as ranked by THE WUR Rankings

Rank	2023 THE WUR	University
1	8	University of California-Berkeley
2	48	University of Illinois at Urbana-Champaign
3	63	University of California-Davis
4	81	University of Wisconsin-Madison
5	101	University of Minnesota-Twin Cities
6	104	University of Maryland-College Park
7	106	Michigan State University
8	112	Ohio State University-Main Campus
9	127	Purdue University-Main Campus
10t	151	Penn State
10t	151	University of Florida
12	180	University of Arizona
13	181	Texas A & M
14	191	University of Massachusetts-Amherst
15	201-250	Rutgers University-New Brunswick
16t	251-300	University of Hawaii at Manoa
16t	251-300	Virginia Tech
16t	251-300	University of California-Riverside
19	301-350	The University of Tennessee-Knoxville

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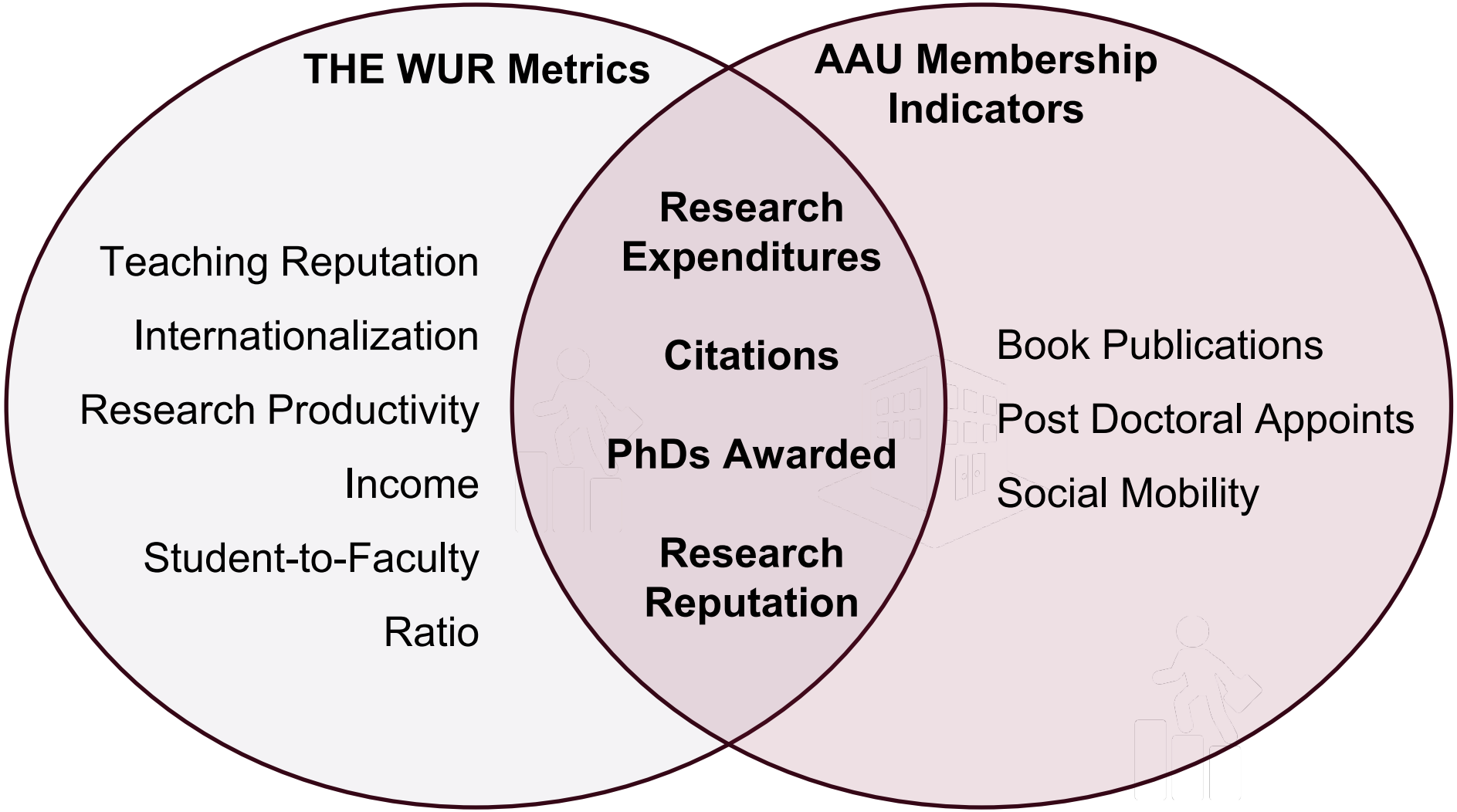
THE Impact Rankings Metrics

Correlation between THE WUR Metrics and AAU Membership Indicators



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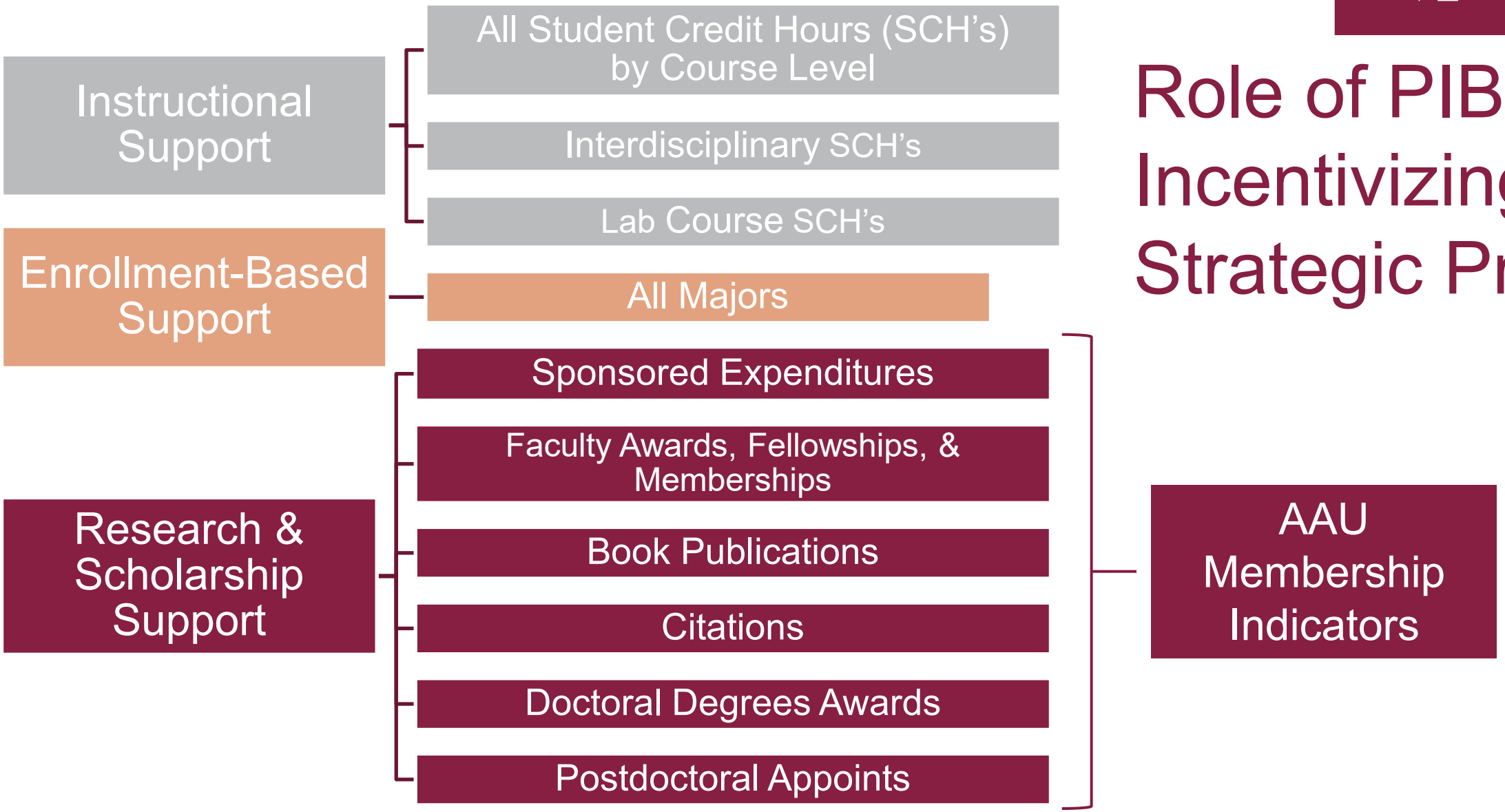
Role of PIBB in Incentivizing Strategic Progress

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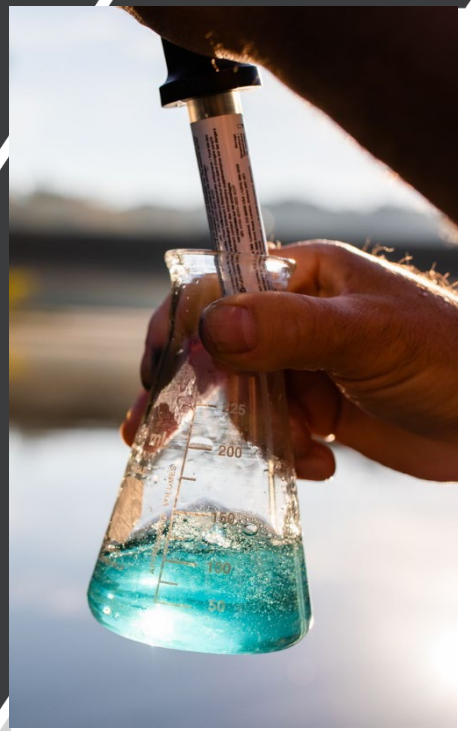
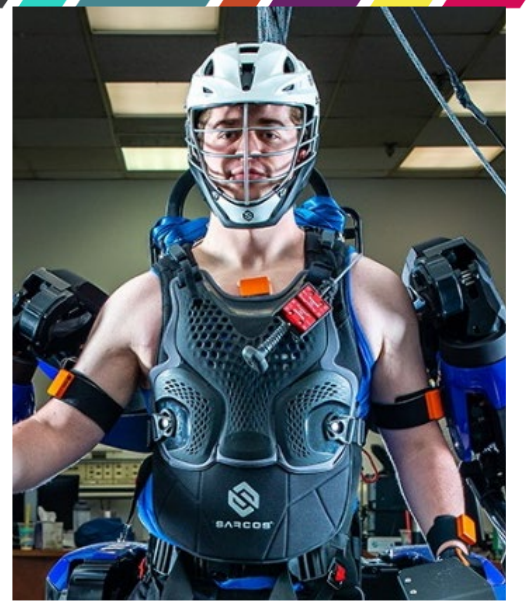
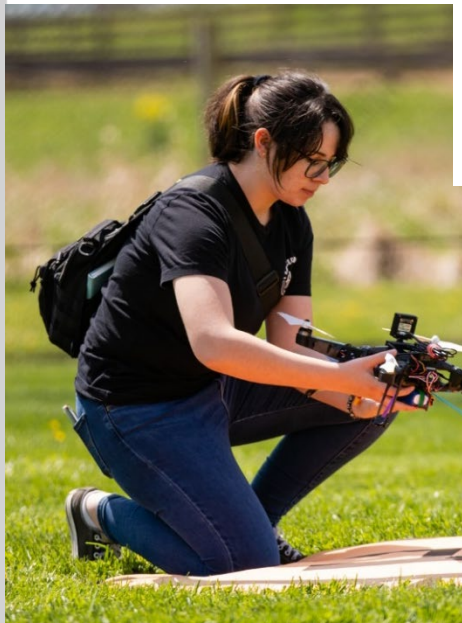
THE 2023 Impact Rankings
Selected SDGs for Submission

Correlation between THE WUR Metrics and AAU Membership Indicators (Full Chart)

	Weight/Phase	Metrics	Category
AAU	P1&P2	Research Expenditures	Research
	P1	*Faculty awards/National Academy Members*	*Research/Reputation*
	P1	Citations	Research
	P1	Books	Research
	P2	PhDs Awarded	Teaching
	P2	Post Doc Appointments	Research
	Info	Pell Enrollment	Teaching
	Info	UG Graduation Rate	Teaching
	Info	Pell Grant Grad Rate	Teaching
	Info	Grad Rate Gap	Teaching
THE WUR	30%	Citations	Research
	18%	*Research Reputation Survey*	*Research/Reputation*
	15%	Teaching Reputation Survey	Teaching
	6%	PhD:Faculty	Teaching
	6%	Research Income	Research
	6%	Research Productivity (# of publications)	Research
	5%	Staff:Student	Teaching
	3%	Proportion international students	International Outlook
	3%	Proportion international faculty	International Outlook
	3%	International Collaborations	Research
	3%	Industry Income	Research
	2%	PhD:Bach Awarded	Teaching
	2%	Institutional Income	Teaching







Higher Education Rankings

BOV Retreat

Dan Sui
Senior Vice President,
Office of Research and Innovation

August 2023

AAU Membership Metrics

- Phase I
  - Competitive Federal Research Expenditures
  - Highly Prestigious Awards and National Academy Memberships
  - Citations
  - Books

Metrics are indicators of volume and quality of sponsored research and scholarship

AAU Membership Metrics

- Phase 2
  - Non-competitive Sponsored Research Expenditures
  - PhDs awarded
  - Postdocs

Metrics are correlated with volume of sponsored research and scholarship, training

AAU Membership Metrics

- Informational
  - Pell-eligible
  - Graduation Rate
  - Pell-eligible Graduation Rate
  - Graduation Gap

Metrics are correlated with quality and accessibility of undergraduate education

Tabletop Exercise

Selecting the next AAU Member

University of Alpha

Private university
934 faculty

			per faculty
Phase 1	Competitive Federal Expenditures	$209M	$216k
	Awards	150	0.16
	Citations	161k	172
	Books	500	0.53
Phase 2	Other Research Expenditures	$48M	$50k
	PhDs	861	
	Postdocs	226	
Informational	Pell Enrollment	14%	
	Graduation Rate	84%	
	Pell Graduation Rate	81%	
	Graduation Gap	3%	

Beta State

Public university
2111 faculty

			per faculty
Phase 1	Competitive Federal Expenditures	$265M	$125k
	Awards	697	0.33
	Citations	321k	152
	Books	1448	0.69
Phase 2	Other Research Expenditures	$55M	$26k
	PhDs	897	
	Postdocs	268	
Informational	Pell Enrollment	34%	
	Graduation Rate	66%	
	Pell Graduation Rate	60%	
	Graduation Gap	6%	

University of Delta at Omega

Public university
1280 faculty

			per faculty
Phase 1	Competitive Federal Expenditures	$209M	$163k
	Awards	307	0.24
	Citations	203k	159
	Books	538	0.42
Phase 2	Other Research Expenditures	$21M	$16k
	PhDs	1425	
	Postdocs	247	
Informational	Pell Enrollment	54%	
	Graduation Rate	62%	
	Pell Graduation Rate	61%	
	Graduation Gap	1%	

University of Nu Eta

UNIVERSITY

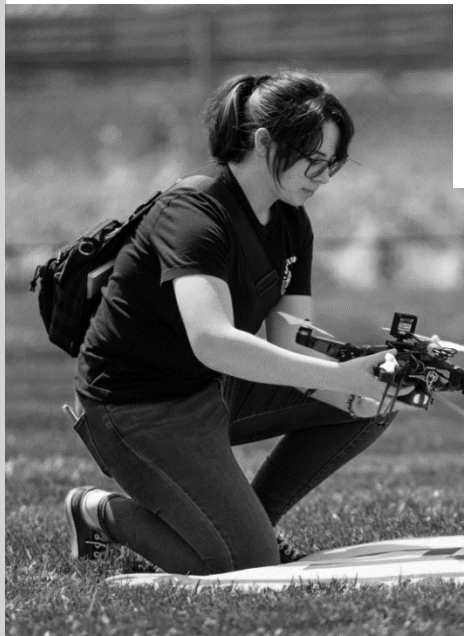
Private university
789 faculty

			per faculty
Phase 1	Competitive Federal Expenditures	$126M	$160k
	Awards	291	0.37
	Citations	203k	257
	Books	490	0.62
Phase 2	Other Research Expenditures	$10M	$13k
	PhDs	582	
	Postdocs	193	
Informational	Pell Enrollment	13%	
	Graduation Rate	91%	
	Pell Graduation Rate	90%	
	Graduation Gap	1%	

Omicron State

Public university
1589 faculty

			per faculty
Phase 1	Competitive Federal Expenditures	$188M	$118k
	Awards	381	0.24
	Citations	230k	145
	Books	642	0.40
Phase 2	Other Research Expenditures	$118M	$76k
	PhDs	655	
	Postdocs	234	
Informational	Pell Enrollment	16%	
	Graduation Rate	87%	
	Pell Graduation Rate	83%	
	Graduation Gap	4%	



Strategies and Next Steps

GOAL

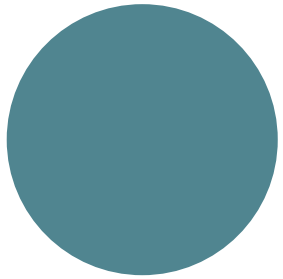
- TOP 100 GLOBAL

OBJECTIVES

- INCREASE RESEARCH EXPENDITURES
- AMPLIFY IMPACT

PRIORITIES

- FACULTY
- INFRASTRUCTURE
- CULTURE



RESEARCH FRONTIERS

- HEALTH
- SECURITY
- QUANTUM
- ARTIFICIAL INTELLIGENCE

Strategies: Phase 1

- Alignment of university budget model
- Increase research volume and impact generally
  - Research Frontiers
  - Destination Area 2.0
  - Research Development Support
- Increase awards and recognition
  - Dedicated resources, in partnership between Faculty Affairs and Research and Innovation
  - Improve university-level recognition and celebration of excellence

Strategies: Phase 2

- Strengthen LINK, the industrial engagement team
- Improve support for postdocs
- Improve support for graduate students

Strategies: Informational Metrics

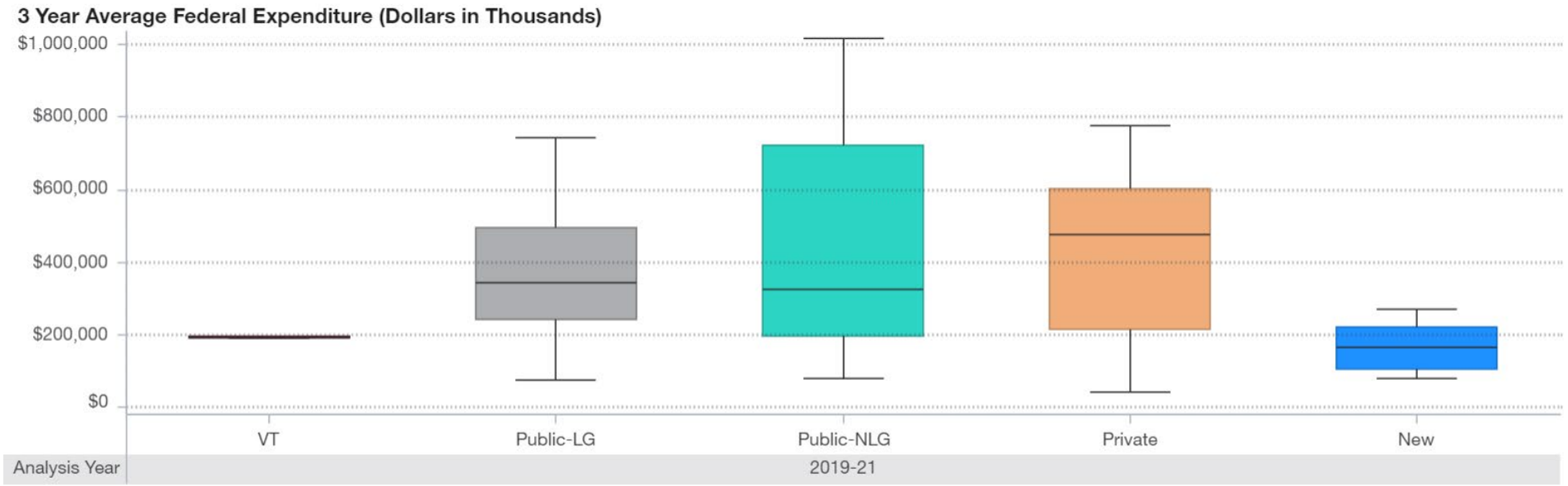
- Virginia Tech Advantage

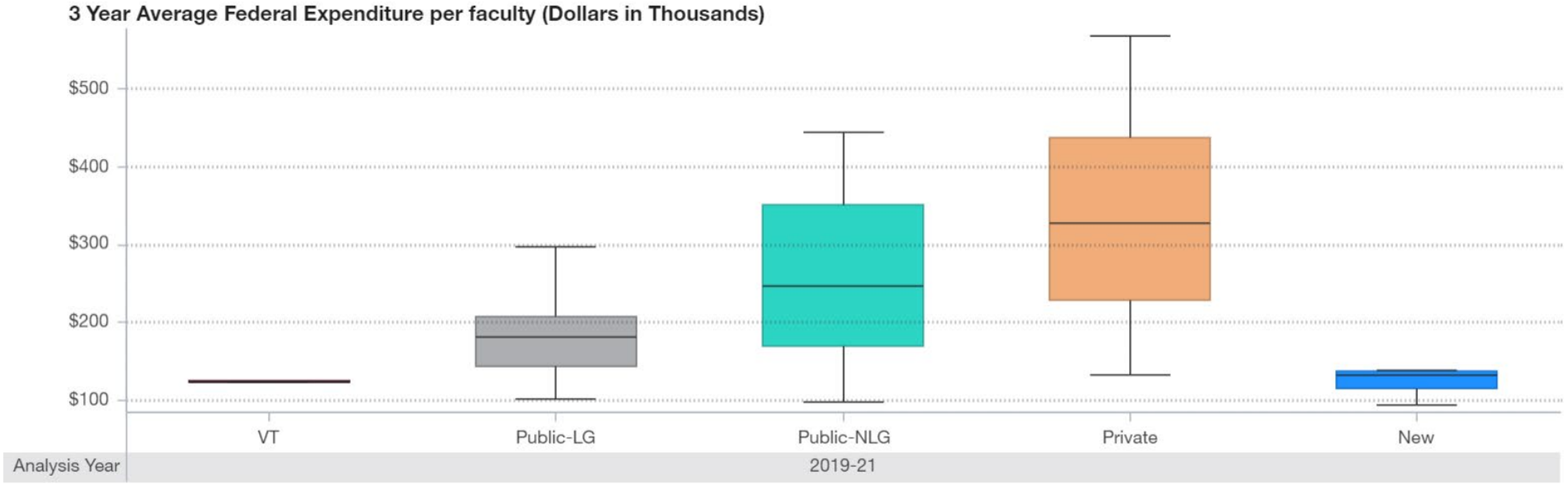
Current Status

(Backup Slides)

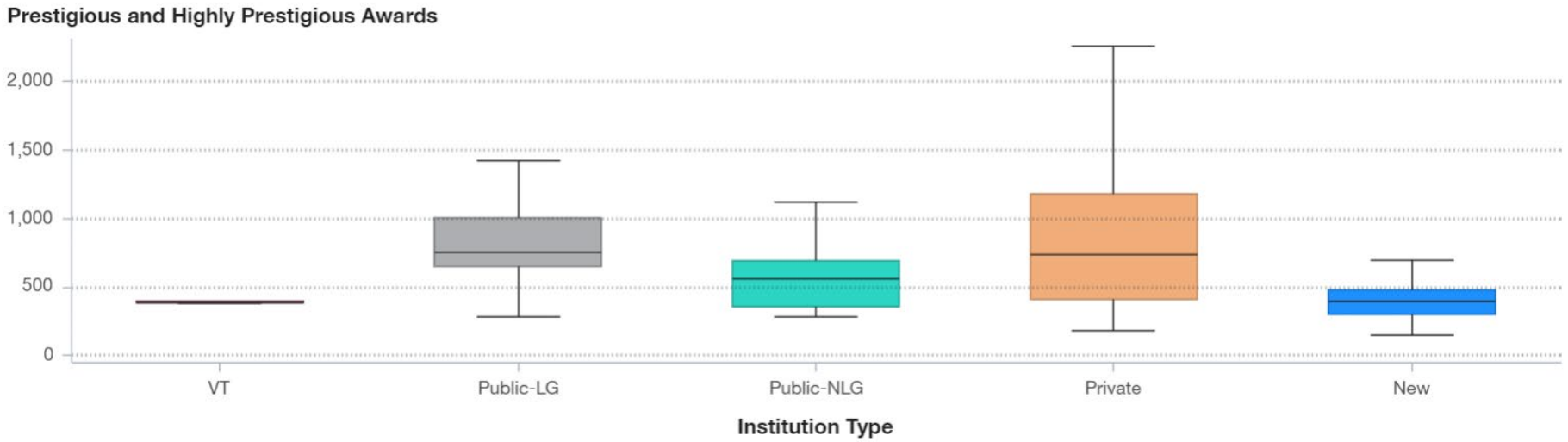
Phase 1:

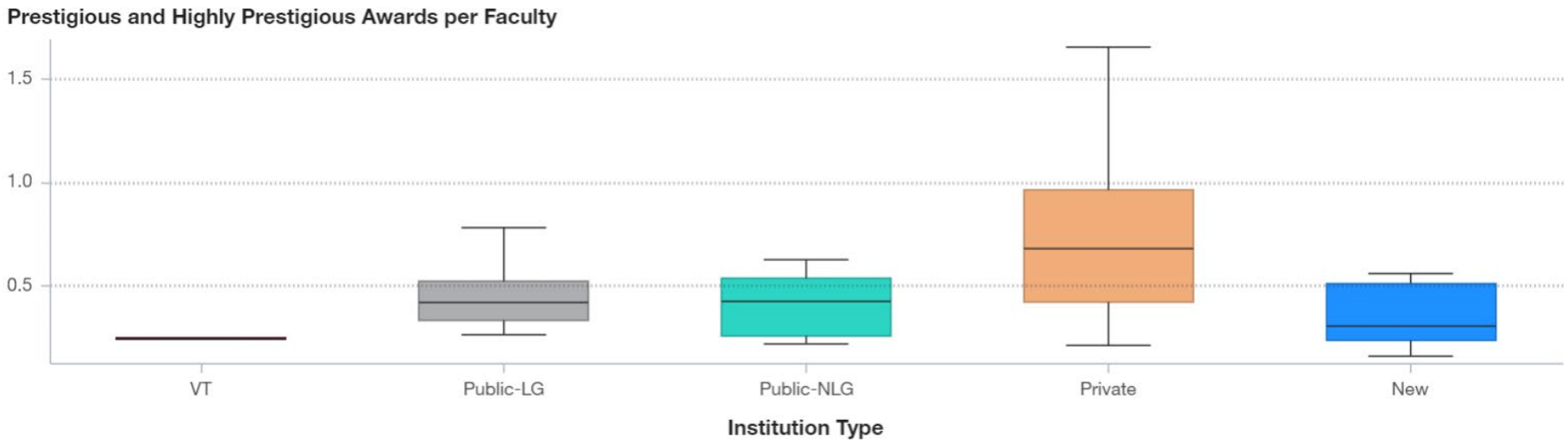
Competitive Federal Expenditure



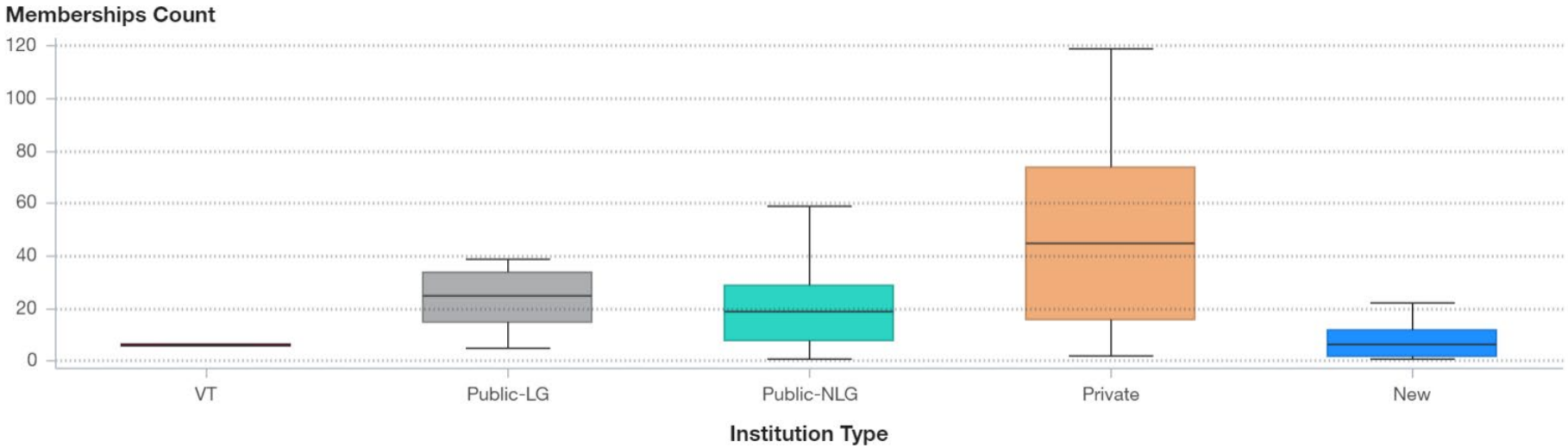


Phase 1: Prestigious Awards





Phase 1:
National Academies Memberships



Robert J. Bodnar

C. C. Garvin Professor of Geochemistry and University Distinguished Professor

National Academy of Sciences

Linsey C. Marr

Charles P. Lunsford Professor and University Distinguished Professor

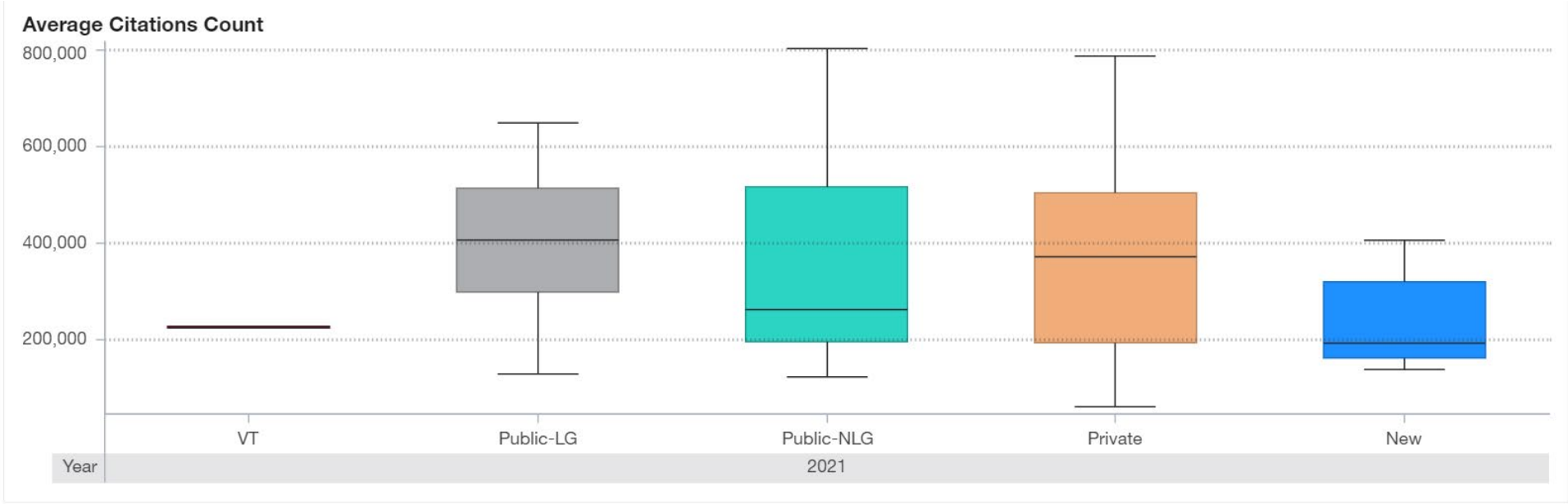
National Academy of Engineering

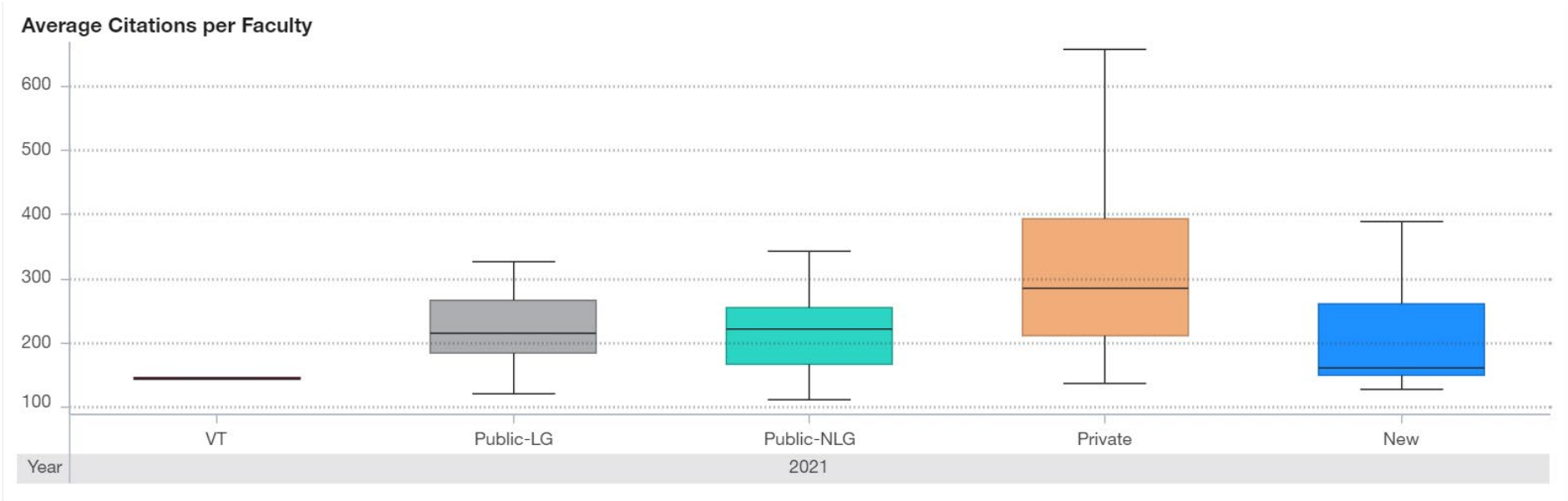
Shuhai Xiao

Professor of Geobiology

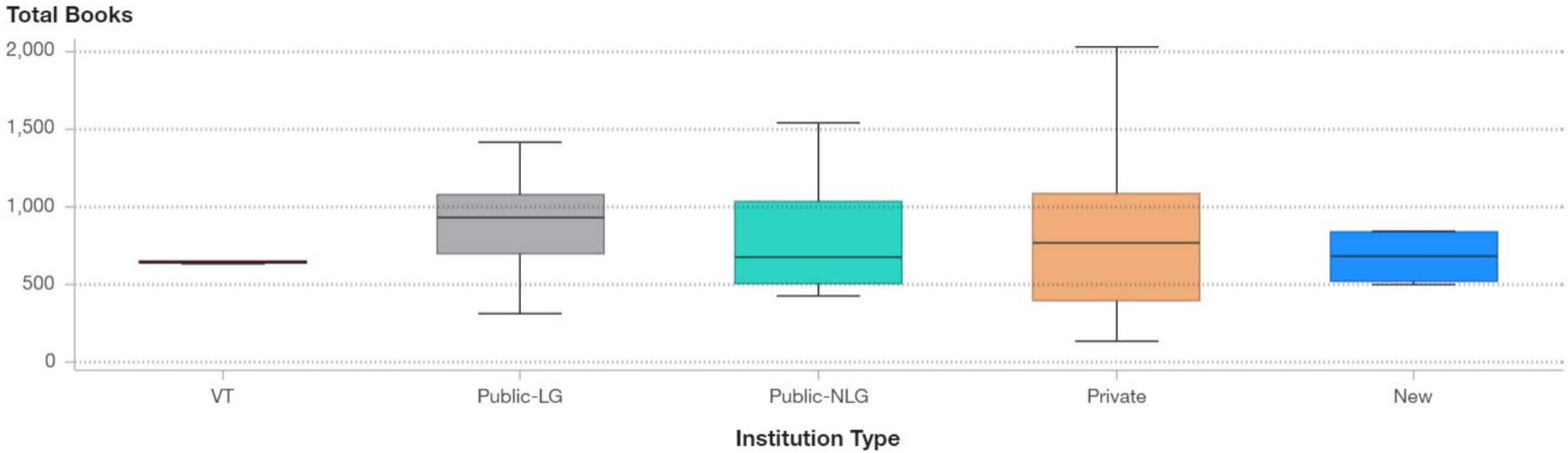
National Academy of Sciences

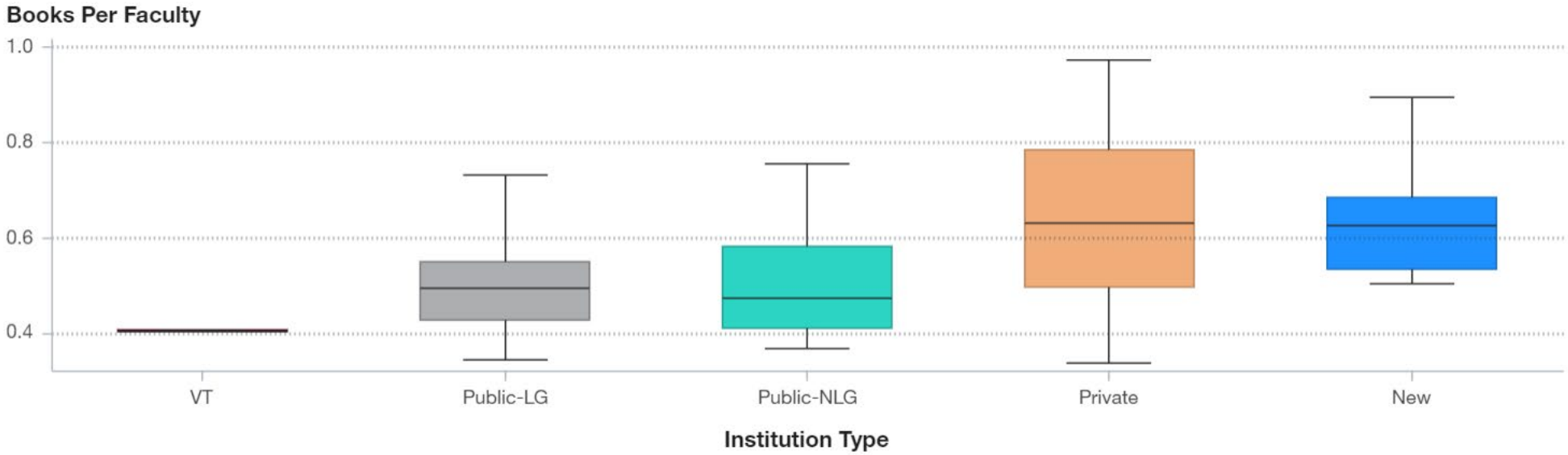
Phase 1:
Citations





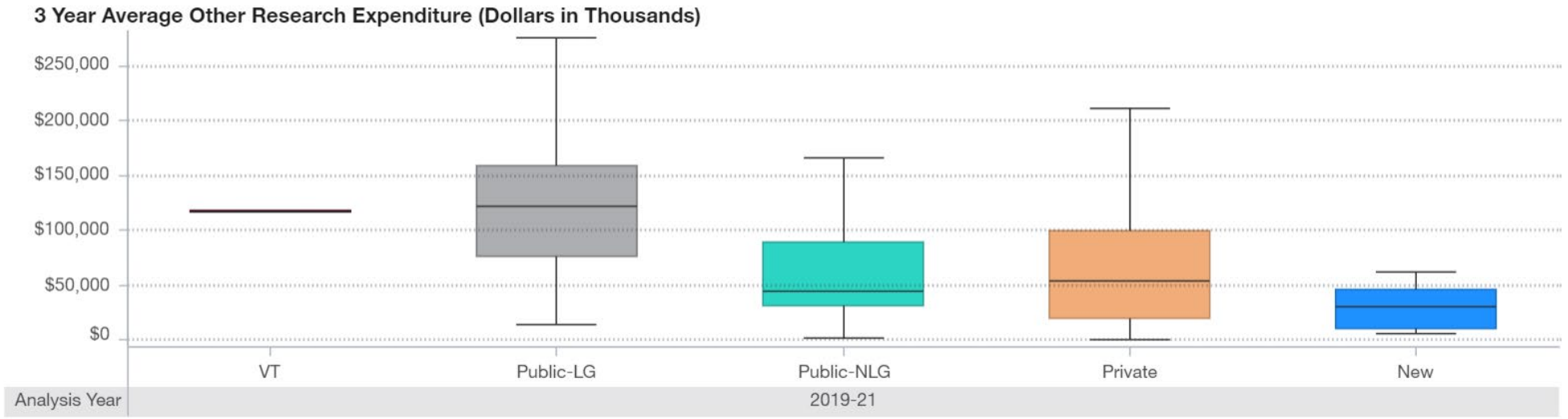
Phase 1:
Books

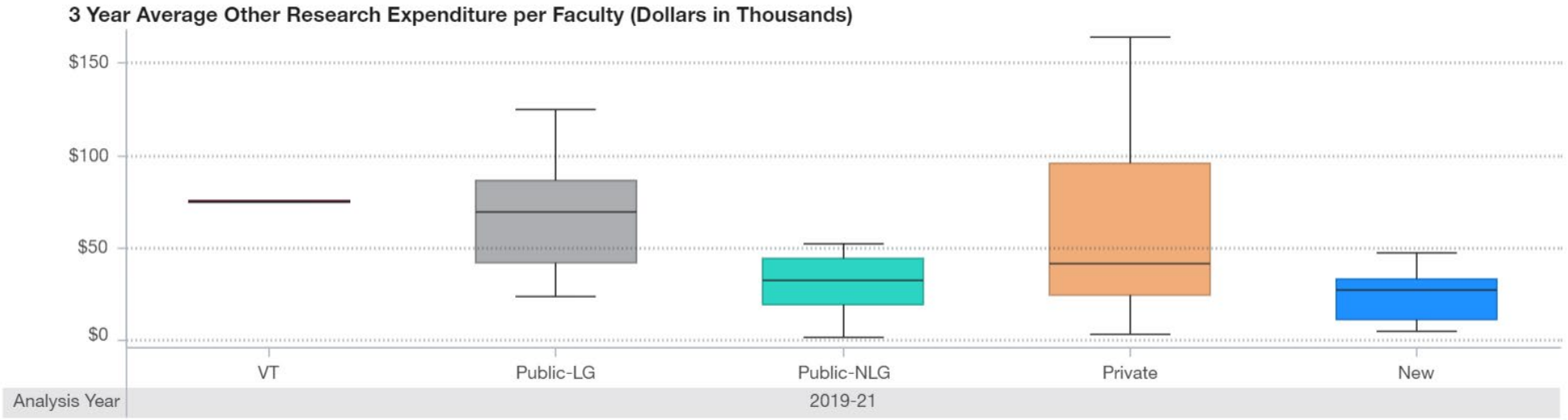




Phase 2:

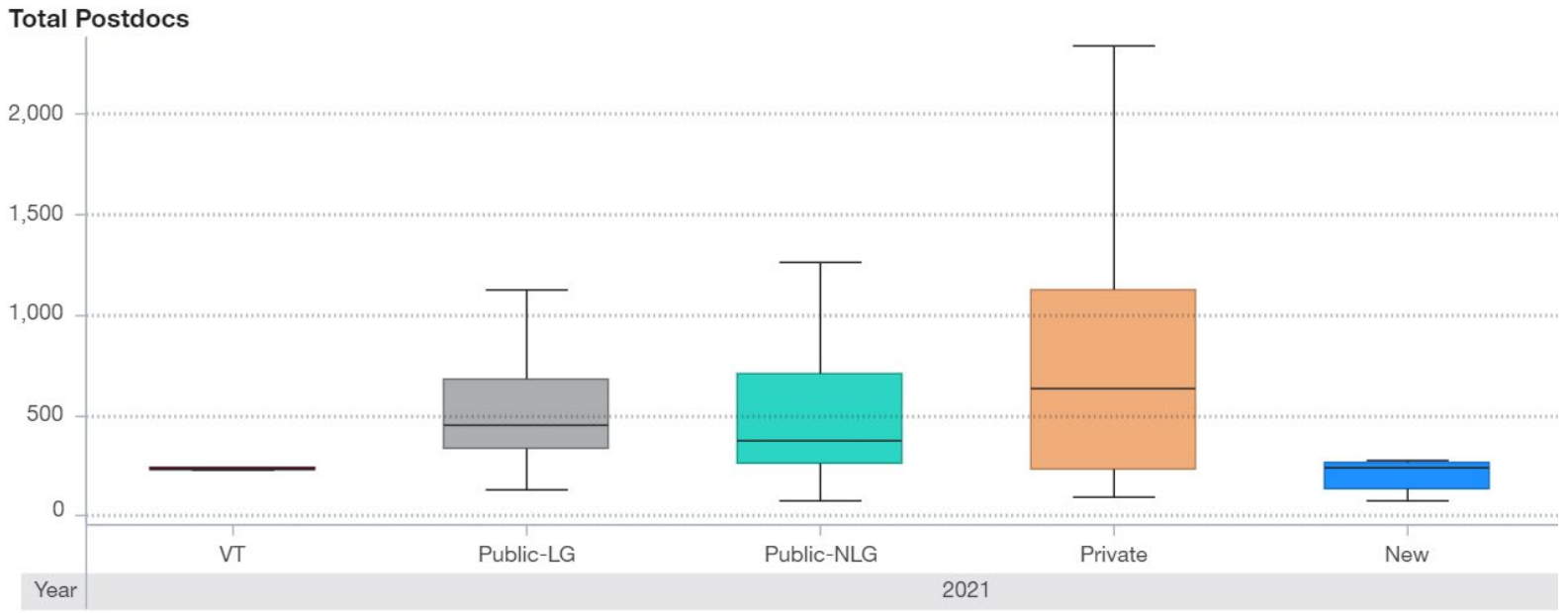
Other Sponsored Research

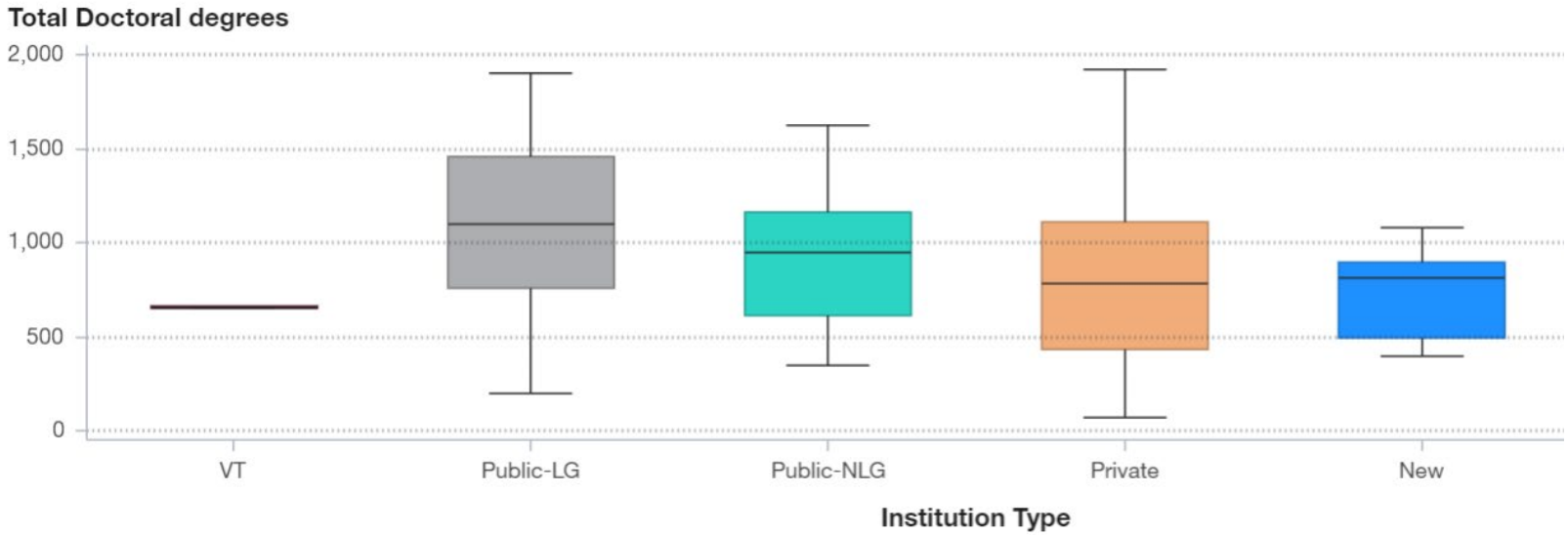




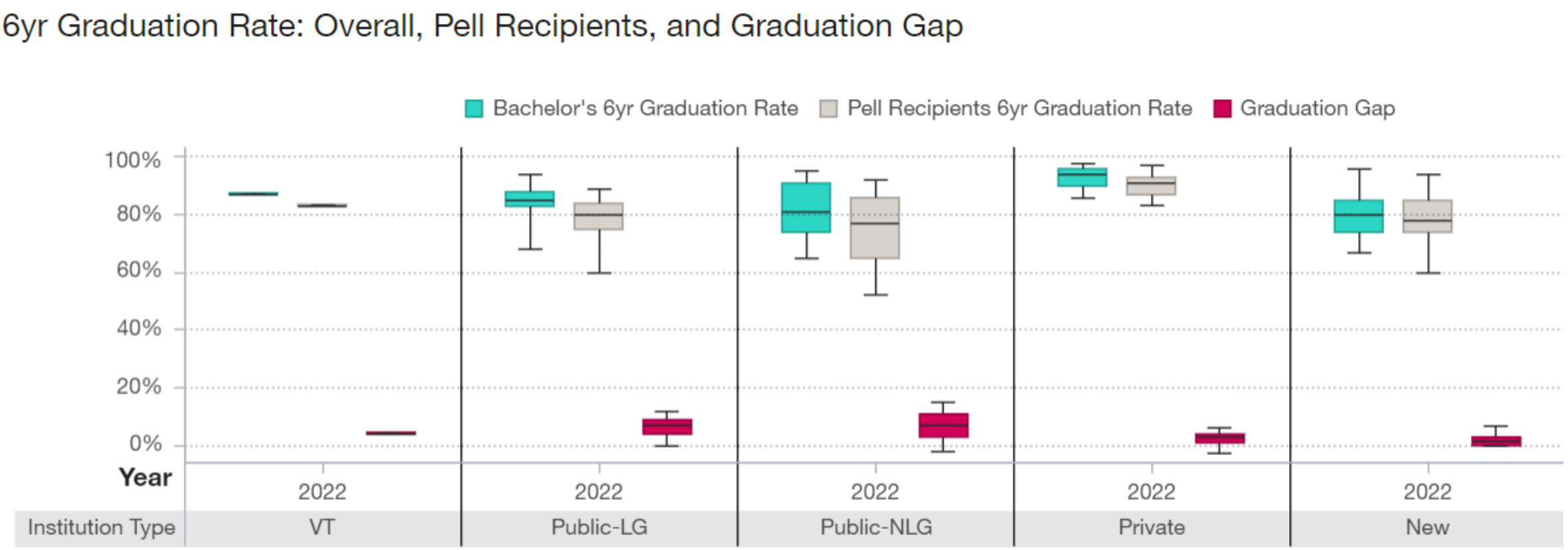
Phase 2:

Postdocs and PhDs

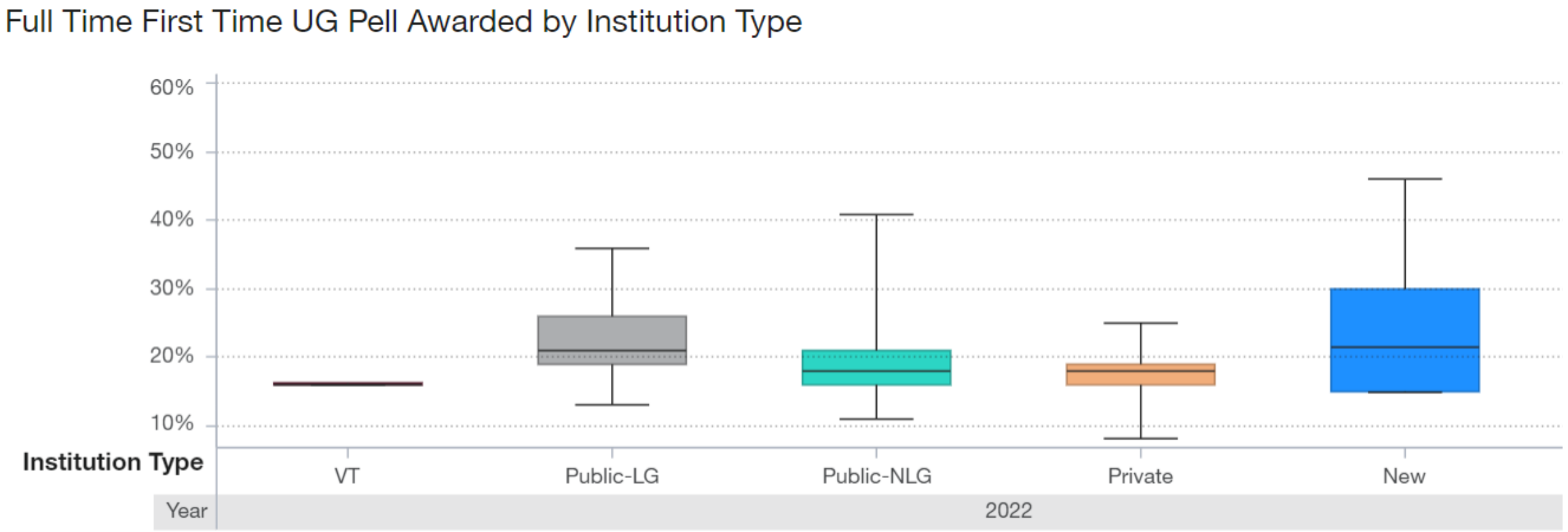




Informational:



Informational:



RESEARCH AND INNOVATION
VIRGINIA TECH™

What drives research success?

- Faculty talent
  - Recruitment/retention
  - Postdoctoral fellows
  - Graduate assistants
- Research infrastructure
  - Facilities
  - Equipment
  - Pre-/post-award expertise
- Support infrastructure
  - Human resources
  - Information technology
  - Compliance
- Partnerships
  - Universities
  - Industry
  - Governmental agencies

What are the university's strategic investment priorities?

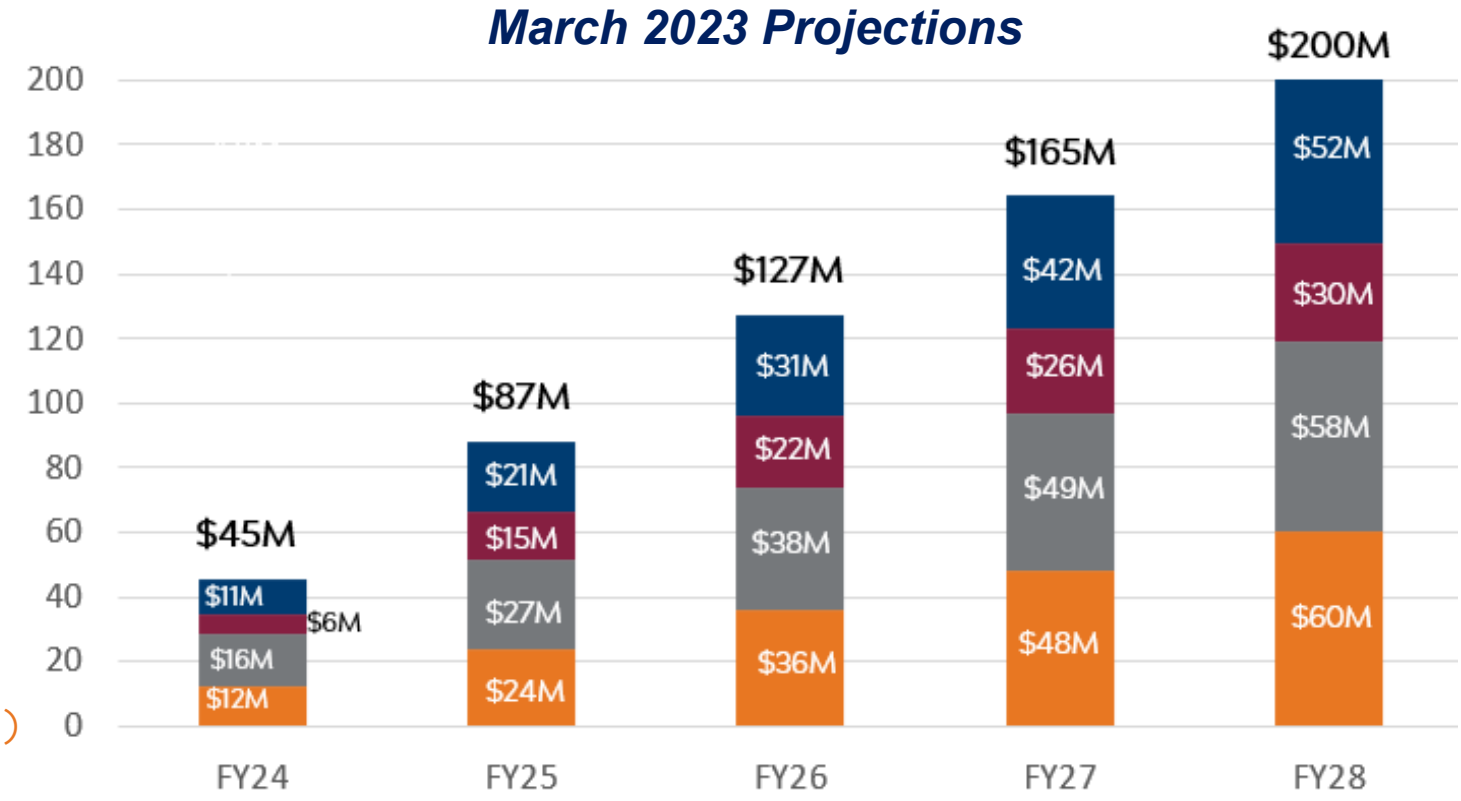
Destination for Talent
Virginia Tech Advantage
Employee Recruitment and Retention

Academic Excellence
Tech Talent Investment-Innovation Campus
Health and Biomedical Sciences
Integrated Security
Destination Areas 2.0

Enabling Infrastructure and Capacity
Advancement
IT Transformation/Technology Infrastructure
Facilities Renewal

Academic Quality and Critical Needs
Academic Incentive-Based Funding (PIBB Model)
Annual Critical Needs Requests

Multiple fund sources will contribute to the achievement of these strategic initiatives



How are our investment strategies and research goals linked?

Destination for Talent
Virginia Tech Advantage
Employee Recruitment and Retention

Academic Excellence
Tech Talent Investment-Innovation Campus
Health and Biomedical Sciences
Integrated Security
Destination Areas 2.0

Enabling Infrastructure and Capacity
Advancement
IT Transformation/Technology Infrastructure
Facilities Renewal

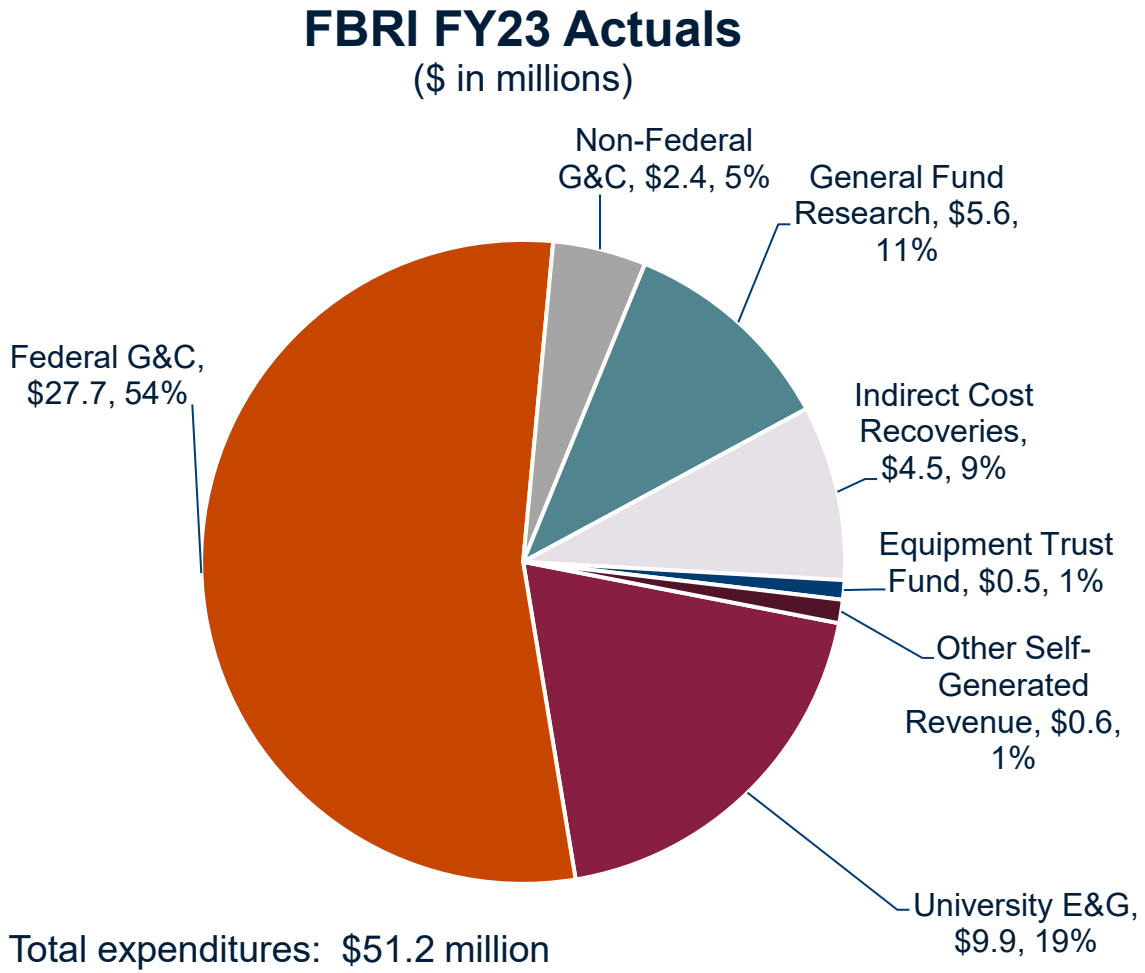
Academic Quality and Critical Needs
Academic Incentive-Based Funding (PIBB Model)
Annual Critical Needs Requests

How is research funded?

Fralin Biomedical Research Institute (FBRI) example

Research programs are funded by multiple sources

- University investments
  - Grants and contracts
  - Indirect cost recoveries
  - Philanthropy
  - Nongeneral funds
- State investment
  - General fund support
  - Equipment trust fund
- Self-generated revenue (e.g., service centers)



FBRI expansion goals will require incremental funding

$s in Millions

30 faculty pre-expansion	FY24	FY25	FY26[1]	FY27	FY28	FY29	FY30
New Research Faculty	12	16	19	23	27	31	35
Resources							
University E&G Support							
Base	$ 3.9	$ 4.3	$ 5.6	$ 6.0	$ 6.4	$ 6.8	$ 6.8
One-time	3.4	2.8	11.3	1.7	2.3	2.0	1.6
Subtotal University Support	**7.3**	**7.0**	**17.0**	**7.7**	**8.7**	**8.8**	**8.4**
Salary Support from Grants & Contracts	0.4	0.8	1.3	2.2	2.6	2.8	3.0
Returned Overhead	0.3	0.7	0.8	1.3	1.8	2.0	2.9
Philanthropy	4.0	5.7	5.6	8.3	6.4	4.8	1.8
Other	4.6	1.0	1.0	1.0	1.0	1.0	1.1
Total Resources	**16.6**	**15.2**	**25.7**	**20.4**	**20.5**	**19.5**	**17.2**
Expenses							
Personnel and Operating	4.3	5.5	6.8	8.2	9.3	10.6	11.9
Startup	8.0	6.5	7.1	8.6	5.2	7.3	7.6
Space and Equipment	6.4	4.5	14.7	5.3	5.5	5.5	5.5
Total Expenses	**18.7**	**16.5**	**28.5**	**22.1**	**20.1**	**23.4**	**25.0**
Surplus/(Shortfall)[2]	**$ (2.1)**	**$ (1.3)**	**$ (2.8)**	**$ (1.7)**	**$ 0.4**	**$ (3.9)**	**$ (7.8)**

(1) Includes proposed $8.8M one-time capital expenditure for expansion of space at the Children's National Research and Innovation Campus.
(2) Shortfall largely due to additional faculty startup commitments. Additional resources will need to be identified, or expansion timeline will be adjusted.

VIRGINIA TECH

VIRGINIA TECH ADVANTAGE:

Dr. Menah Pratt and Dr. Matt Holt

BOV PRESENTATION | August 2023

VIRGINIA TECH ADVANTAGE

The **Virginia Tech Advantage** is a university wide, multiyear **commitment** to offer the broad educational experience to admitted undergraduate students from Virginia.

It reflects the university's **commitment** to serve the Commonwealth of Virginia.

VIRGINIA TECH ADVANTAGE

- At scale, the program will remove barriers for **more than 5,500 undergraduate students** from the Commonwealth with unmet financial need.
- It will provide a strong foundation for academic success through **enhanced resources**, a **community of peers and mentors**, and **scholarships and emergency funds**.
- It will help students enhance the value of their Virginia Tech degrees by providing **opportunities for research**, **experiential learning**, and **discovery** inside and outside of the classroom or lab.

VIRGINIA TECH ADVANTAGE

Looking ahead, **Virginia Tech Advantage** will begin to shift from planning to **implementation**.

Three key implementation components include:

- **Philanthropy** and fundraising efforts.
- **Government affairs** and external stakeholder alignment and coordination.
- **Internal policy** and process alignment.

In the long run, we plan for each component to contribute 1/3 of the resources.

PHILANTHROPIC CAMPAIGN

- A new $500M **component** of the **Boundless Impact Campaign**
- Will **officially kickoff Fall 2023.**
- Target is $425 million in new endowment over ten years:
  - $400 million in endowed scholarships.
  - $25 million to support student success.
- Plus $75 million in current use funds, also over ten years:
  - $50 million to support scholarships.
  - $25 million to support student success.

PHILANTHROPIC CAMPAIGN: Student Success Priorities

- BASIC NEEDS SUPPORT:
  - **Increased scholarships**
  - Additional Student **emergency funds**
  - Added resources for **The Market**
- CAREER PREPARATION:
  - Added support for **internships**.
  - Coordinated **project-based learning**.
- TRANSFORMATIVE EXPERIENCES:
  - **Study abroad** opportunities.
  - On- and off-campus **research experiences**

LEGISLATIVE EFFORTS

Senior campus leaders and staff in the Office of Government and Community Relations will:

- **Work at the state level** to expand resources for underserved students in the commonwealth.
- **Coordinate efforts** at the federal level **to expand Pell resources**.

Virginia's Appropriation Act includes $5.5M of **new state general funds** for Virginia Tech students in FY 2023-24.

INTERNAL ALIGNMENT

As noted in the June meeting, we will pursue strategies to **ensure internal alignment** with overall objectives:

- Complete a **full policy audit** (financial and academic) to identify and remove institutional barriers to undergraduate student success.
- Pursue **curricular alignment** to support four-year graduation across all degrees.
- **Review** existing **scholarship usage** and, where possible, modify language to expand award criteria in existing fund agreements.

VIRGINIA TECH

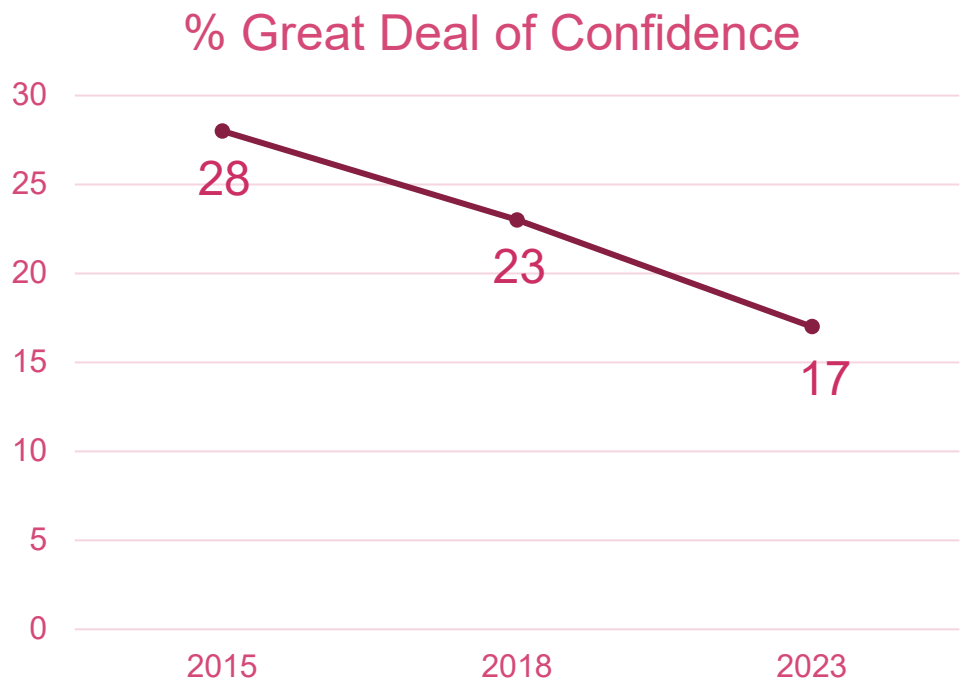
VIRGINIA TECH ADVANTAGE

Dr. Rachel Holloway
on behalf of Student Experience Working Group
Co-Chairs Dr. Frances Keene and Dr. Ellington Graves

Gallup.com

EDUCATION JULY 11, 2023

Americans' Confidence in Higher Education Down Sharply

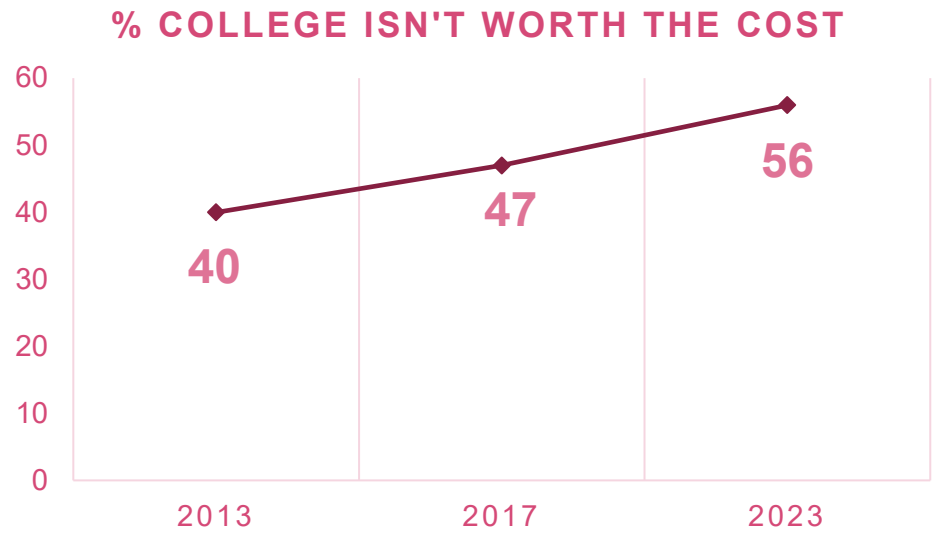


WSJ NEWS EXCLUSIVE | U.S.

Americans Are Losing Faith in College Education, WSJ-NORC Poll Finds

Confidence in value of a degree plummeted among women and senior citizens during pandemic

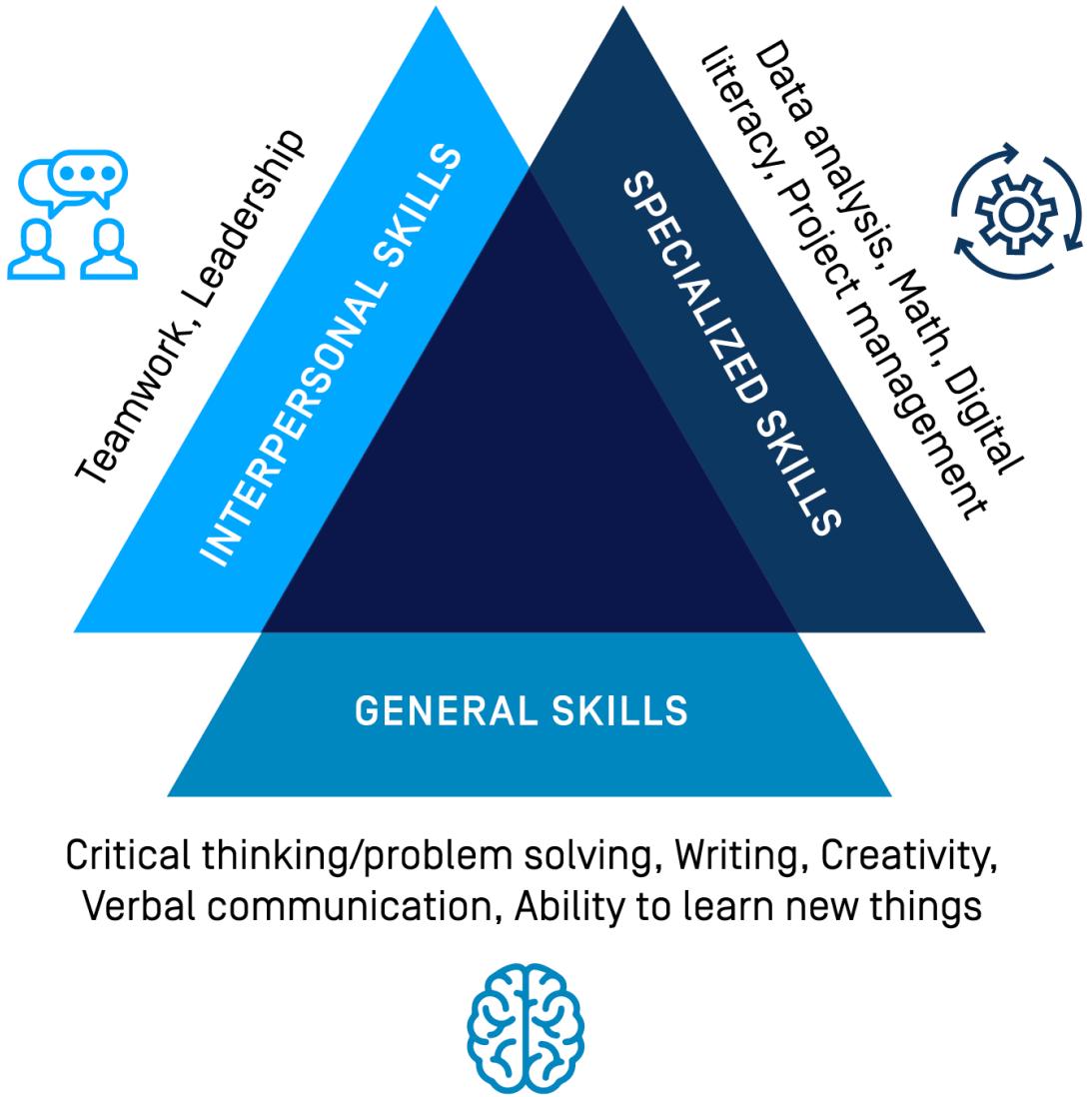
Wall Street Journal, March 31, 2023



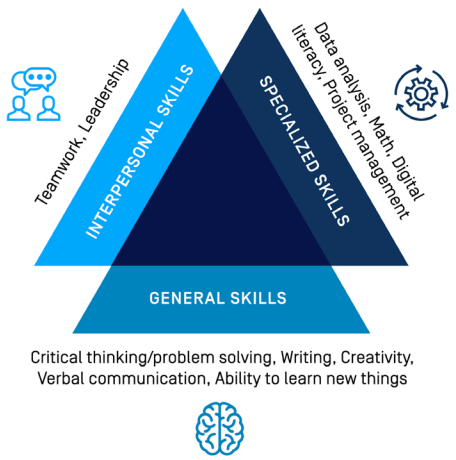
“At the core of our findings was a fascinating insight that alumni who reported strong skill development were earning more money and had more positive assessments of the value of their education, including feeling the education helped them achieve their goals, was worth the cost, and had a positive impact on their career and life.

There was another very important thread to our findings: Equity gaps persist. “

Essential Skills



Alums who rated their skill development as “high” were more likely than those who rated skill development as “low” to rate their post-completion outcomes as high.



Earnings

Achieved Goals

Worth the Cost

Career Impact

Life Impact

What's the "secret sauce" in undergraduate education?

Holistic, Experiential Education

An integrated, intentional, and inclusive educational environment, both curricular and co-curricular, designed to promote a student's intellectual and personal development around critical competencies needed to flourish in work and life.

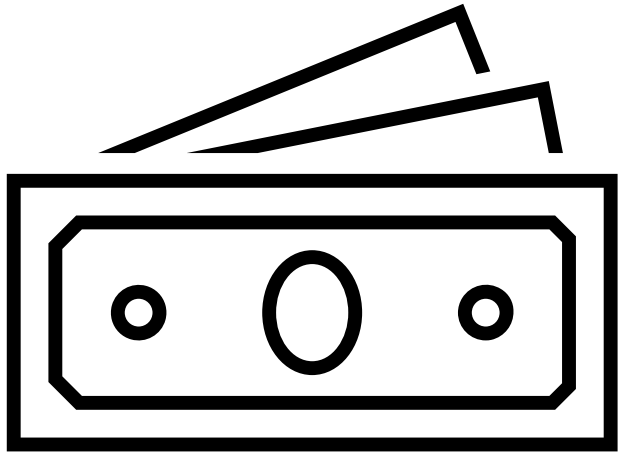
ATTACHMENT D

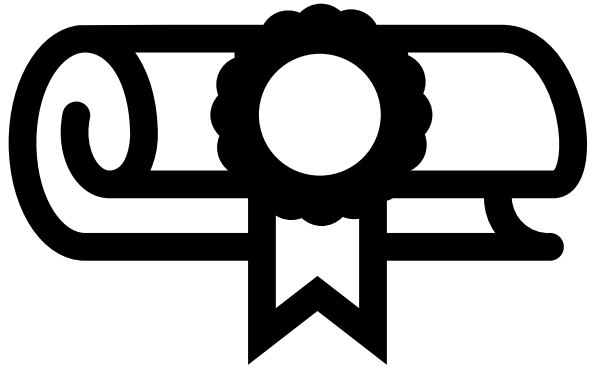
“Structured Flexibility”

“Inescapable Opportunity”

Student Experience Working Group Findings

- **Personal and financial reasons lead to breaks in enrollment.**
- **Financial challenges increase student stress.**
- **Financial shortfalls and emergencies disrupt academic performance.**
- **Costs associated with transformational experiences create barriers for low-income students.**
- **Additional cost shapes co-curricular participation.**
- **University structures and practices may increase the cost of education.**





"Money is time."

168 hours in 7 days

	Allocation	Your Allocation
Sleep	56	
Eating	21	
Life Maintenance (e.g., Personal Hygiene; Laundry)	7	
Travel to/from campus and between classes	15	
Class time	16	16
Study/Prep	32	
Recreation/Socializing/Engagement	10	
Down Time	10	
Work	30	
TOTAL	202	

HABITS

M T W T F S S

NOTES

SUN	MON	TUE	WED	THU	FRI	SAT
Return drive to campus.	Class 9:05-9:55 Class 11:15-12:05 Class 12:20-1:10 Class 1:25-2:15 Class 2:30-3:45 West End Dinner Shift	Dietrick Breakfast Shift includes breakfast Asynchronous class work time Undergraduate Student Senate	Class 9:05-9:55 Class 11:15-12:05 Class 12:20-1:10 Class 1:25-2:15 Class 2:30-3:45 Class 6:30 – 9:00	Dietrick Breakfast Shift includes breakfast Asynchronous class work time West End Dinner Shift	Class 9:05-9:55 Class 11:15-12:05 Class 12:20-1:10 Class 1:25-2:15 Drive home for work	Working at job at home

Scholarship Basics

- Remain continuously enrolled.
- Maintain a cumulative GPA of 3.0 or higher. (GPAs are checked at the end of the spring semester.)
- Enroll full time (12 hours) during Fall and Spring terms.
- Earn at least 30 credits hours each academic year. Credits earned during fall, winter, spring and upcoming summer sessions count toward the 30 hours.
- Grades of “W” do NOT count as earned hours.

First Semester

A new first year student was awarded a scholarship that covers about 50% of cost of attendance.

- The student has an on-campus job for 10 hours per week.
- She travels home most weekends to continue working at a well-paying job she held through high school.
- The student is just meeting expenses with this work plan.

A week before the deadline to drop classes, the student is feeling overwhelmed and struggling in at least two classes.

- She knows she must remain full-time.
- She must earn 15 credit hours to stay on track for her scholarship
- Some courses are prerequisites for courses she needs to take in the the next semester.
- She’s worried about the GPA requirement.

What would you advise?

- Stay in the classes. “W” grade option is available.
- Drop one class to focus on the second. W grade option is available.
- Stay in the classes. Find other financial resources for the end of the semester to stay focused on academics after Thanksgiving.
- Others?

Outcomes and Impact

MATH 1225	4	W
CHEM 1035	3	D-
CS 1114	3	W
ENGL1105	3	A-
ENGE 1215	2	A-

Attempted Hours	15
Earned Hours	8
CUM GPA	2.57

MATH 1225	4	C+
CHEM 1035	3	D-
CS 1114	3	Drop
ENGL1105	3	A-
ENGE 1215	2	A-

Attempted Hours	15
Earned Hours	12
CUM GPA	2.24

MATH 1225	4	C+
CHEM 1035	3	D-
CS 1114	3	D
ENGL1105	3	A-
ENGE 1215	2	A-

Attempted Hours	15
Earned Hours	15
CUM GPA	2.18

Outcomes and Impact

Fall semester

MATH 1225	4	W
CHEM 1035	3	D-
CS 1114	3	W
ENGL1105	3	A-
ENGE 1215	2	A-

Attempted Hours	15
Earned Hours	8
Term GPA	2.57
CUM GPA	2.57

Spring Semester

ECE 1004	3	C+
PHYS 2305	4	C+
MUS 1104	3	A
ENGL1106	3	A
ENGE 1216	2	A-

Attempted Hours	15
Earned Hours	15
Term GPA	3.16
CUM GPA	2.96

23 earned hours
2.96 overall GPA

What to do?

- Needs 9 additional hours to exceed 30 credit hours and move forward in degree.
- Needs 3.1 Term GPA in 9 VT credit hours to reach 3.0 CUM GPA

9 hours for In-State	VCCS at home	VT courses; on-campus housing and dining	VT courses, off-campus housing and dining	VT tuition and fees, virtual campus
Tuition and fees	$1500	$5,070	$5,070	$4,630
Housing and Food	Free	@ $6,000	@ $6,000	Free
Work	High	Low	Low	High
	$1,500	$11,000	$11,000	$4,630

Is it Worth It?

Extending time to degree by one year	In-state	Out-of-State
Cost of attendance, continuing student, off-campus residence	$33,422	$54,940
Lost earning for one year (Computer Engineer)	$72,000	$72,000
Total Cost	$105,422	$126,940