

# Using Data to Improve Cost Analysis for Funding Formulas

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# Some Recent Reform Efforts

State	Sector
Colorado	Statewide
Florida	Separate Reviews
Illinois	Four-Year Institutions
Indiana	Four-Year Institutions
Missouri	Statewide
Oregon	Separate Processes for Four- and Two-Year Institutions
Pennsylvania	PASSHE
Texas	Two-Year Institutions
Virginia	Statewide

# Institutional Adequacy Conceptual Framework – Missouri & Virginia

	Expenditure Type Category	Funding Responsibility
	Non-Instructional Mission-Related Activities and Other Activities	External Funders & Self-Support
	Capacity Building	Mix (State/Local, Tuition, & External Funders)
Funding Model	Performance	State
	Variable Costs	Mix (State/Local & Tuition)
	Fixed Costs	State/Local

# Using Instructional Cost and Productivity Data to Inform Funding Models

The Cost Study at UD

Jen Snyder, *Director of HEC*

Marcia Preston, *Manager of The Cost Study*



# Context for Examining Instructional Costs

INSIDE  
HIGHER ED

2018 SURVEY OF  
COLLEGE AND UNIVERSITY  
PRESIDENTS

A STUDY BY INSIDE HIGHER ED AND GALLUP

“Presidents overwhelmingly believe the public’s skepticism is based on **misunderstandings about colleges’ wealth**, how much they charge (and spend) and the overall purpose of higher education.”

American College  
President Study  
2017



Top three concerns identified by presidents as important for their successors are all related to **finances**:

- budget and financial management (68%)
- fundraising (47%)
- and enrollment management (38%).

THE CHRONICLE OF  
HIGHER EDUCATION



The Edge

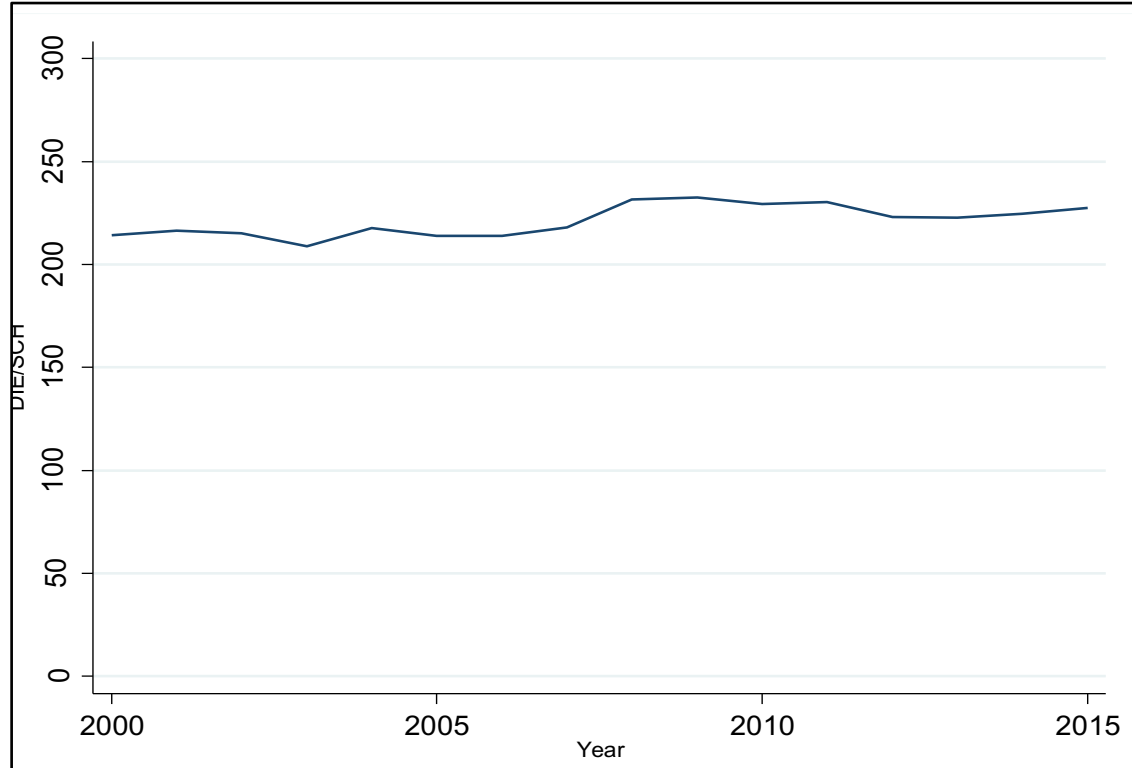
Sept. 28, 2022: Working the Public-Perception Problem

“Even before the pandemic, colleges were struggling against a set of internal and external pressures... Among the internal factors: **decades not knowing the detailed costs of institutional operations**, in part because they were difficult to track, but also because doing so would have meant making hard decisions. (“I don’t know,” a college trustee once told me, “and I don’t want to know.”) “Zombie” academic programs, under enrolled and distant from the mission, often accumulated.”

“Fortunately, many solutions are in colleges’ power to pursue. **More leaders are assessing the costs of their various programs** and centers.”



# Instructional Costs - Longitudinal Findings



Across all academic disciplines

Weighted average Direct  
Instructional Expenditures per  
Student Credit Hour

2000-2015



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EDUCATION POLICY INITIATIVE  
UNIVERSITY OF MICHIGAN



COLLEGE OF ARTS AND SCIENCES  
Public Policy

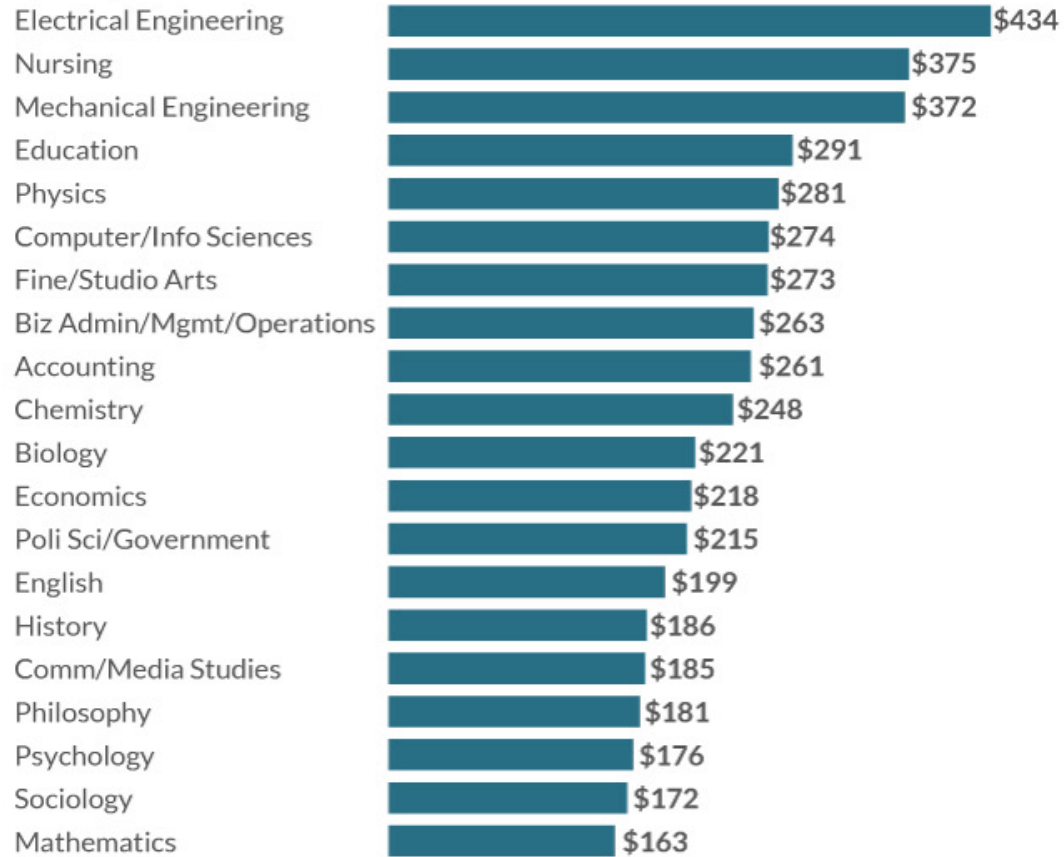


Higher Education Consortia

# Understanding Instructional Cost Differences

## Average instructional cost

By field, per credit hour



Source: The National Bureau of Economic Research

“Why Is Math Cheaper Than English? Understanding Cost Differences In Higher Education”

2018 NBER Working Paper



GERALD R. FORD SCHOOL OF PUBLIC POLICY  
EDUCATION POLICY INITIATIVE  
UNIVERSITY OF MICHIGAN



COLLEGE OF ARTS AND SCIENCES  
Public Policy

76-83% of the variation in instructional costs  
due to program differences

Middaugh et al. (2003)



Higher Education Consortia

# Background – HEC & The Cost Study

- The Cost Study at the University of Delaware
  - Not-for-profit, fee-for-service study
  - A leader in the analysis and benchmarking of program-level instructional costs and productivity since 1996
  - Available to all 4-year, nonprofit colleges and universities
- The Higher Education Consortia (HEC)
  - Established in 2015 to promote consortium relationships and research using data from The Cost Study
    - “Skills, Majors, and Jobs: Does Higher Education Respond?” (NBER, 2023)
  - Advisory Board provides guidance
  - Housed in an Institutional Research office





# Community College Cost & Productivity

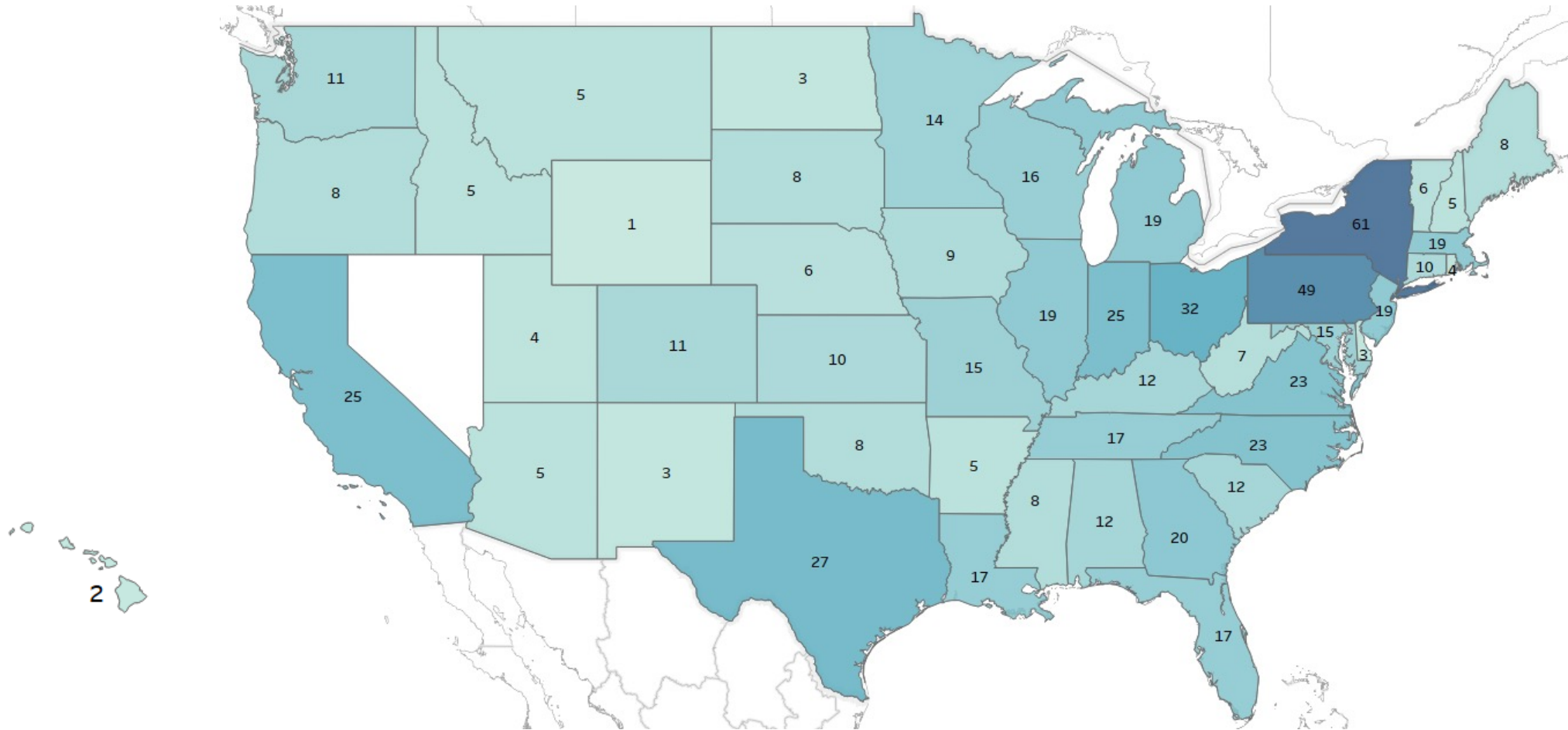
- National Community College Cost & Productivity Project
  - Formerly “The Kansas Study”
  - The National Higher Education Benchmarking Institute (NHEBI) at Johnson County Community College
  - “Provides discipline-level data and benchmarks for staffing plans and decisions about faculty positions, for academic program planning and assessment, and for documentation of compliance for accreditation purposes.”

Michelle Taylor, Senior Research & Data Analyst

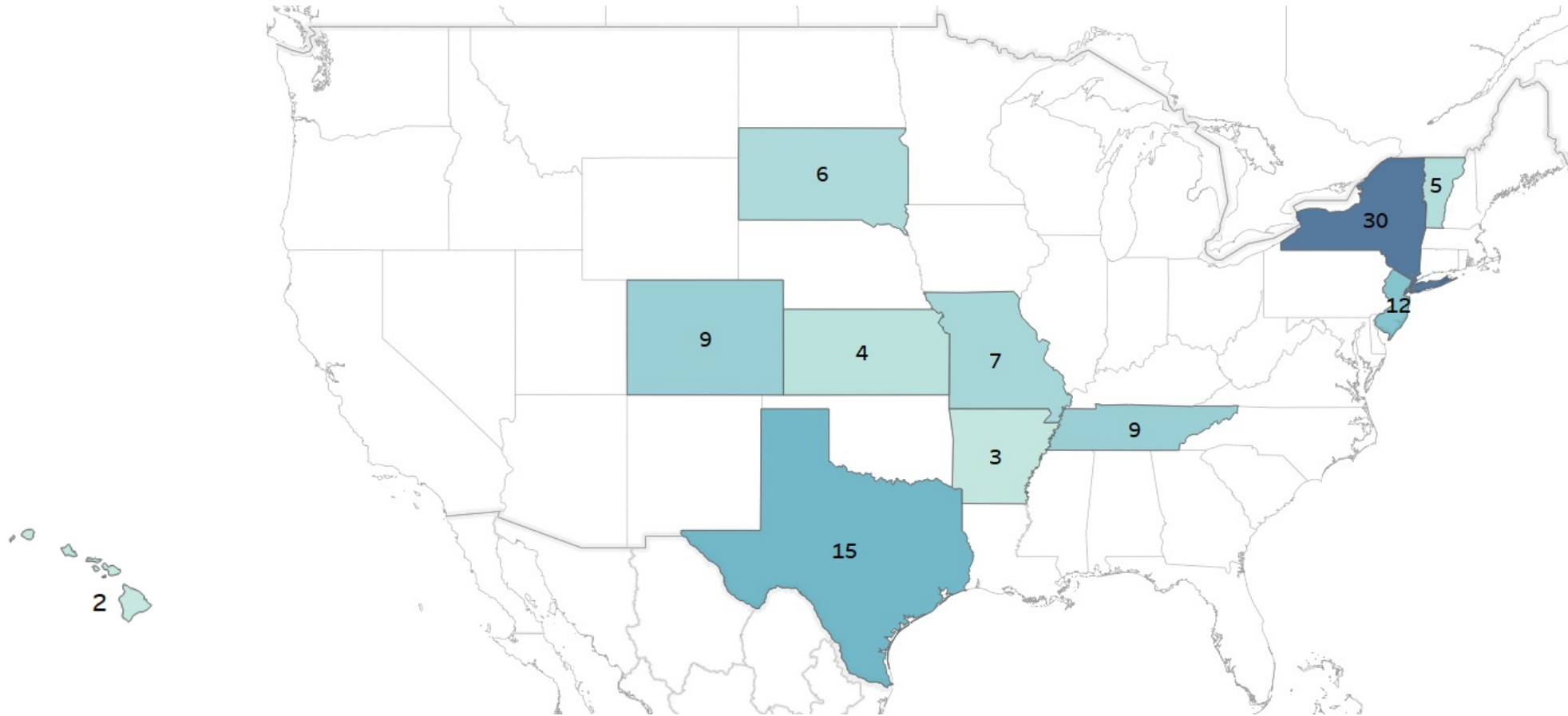
913-469-3831 | michelletaylor@jccc.edu | nccbp.org



# Participation by U.S. State



# Public Participation by Convening States



# The Cost Study Answers...

Who...

*T/TE, other regular, supplemental faculty, TAs*



...Is teaching what to whom...

*Student credit hours, organized class sections, online, undergrad/grad*

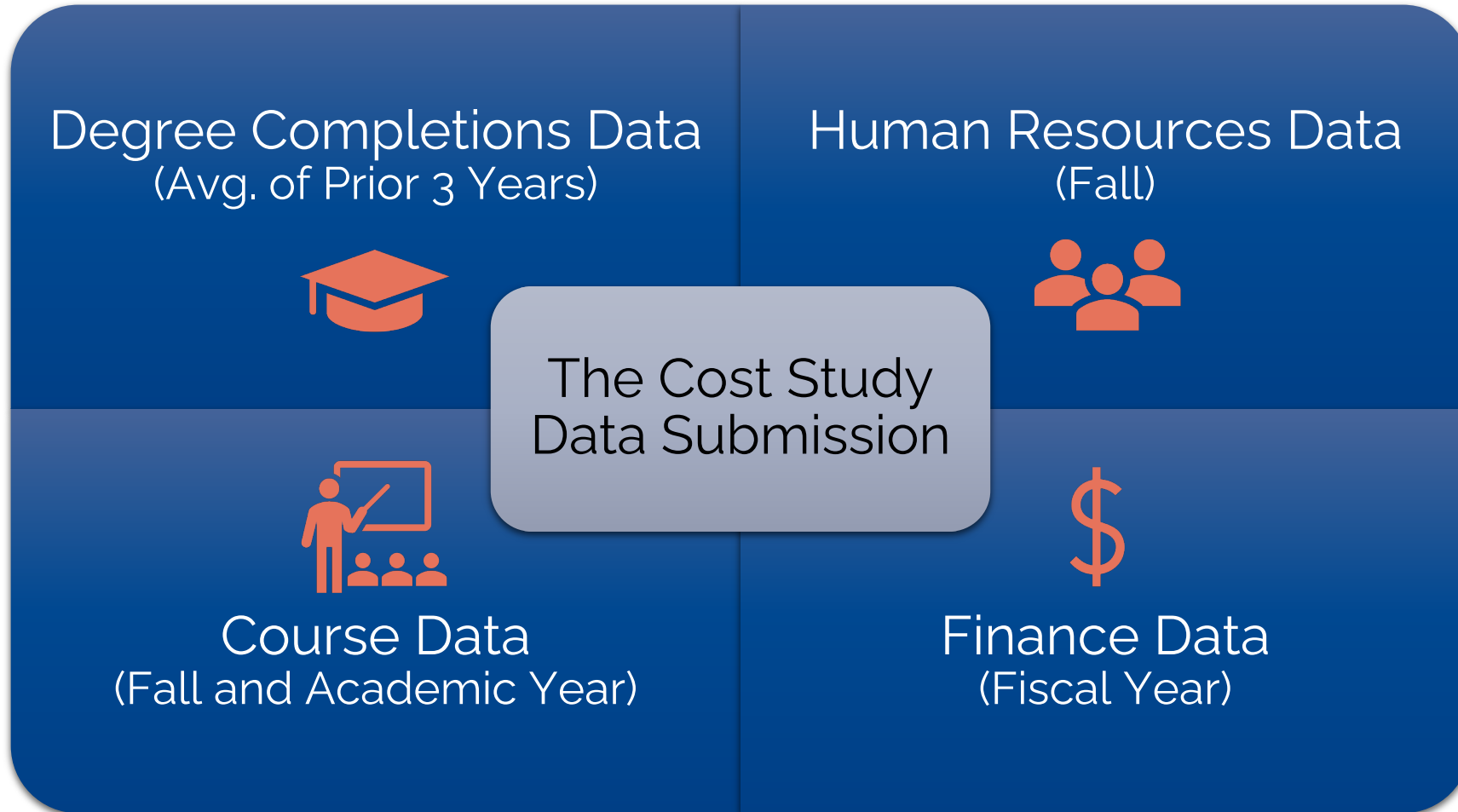


And at what cost?

*Instructional, research, public service expenditures*

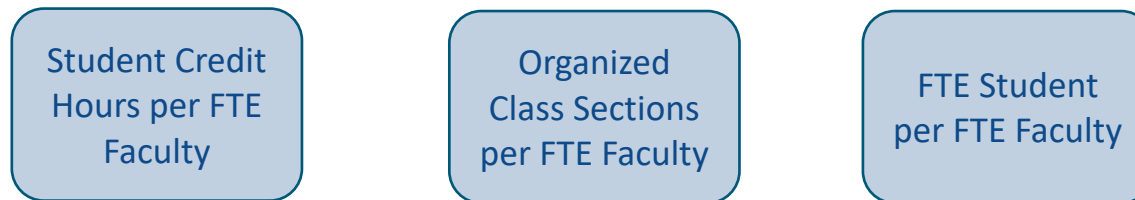


# The Cost Study Data Elements



# Cost and Productivity Metrics

- Expenditures
  - Instructional Cost per Student Credit Hour (or per FTE Student)
  - Research and Public Service Expenditures
- Faculty Workload (for different faculty types)



How are faculty spending their instructional time?

OR

Who is teaching the courses at each level?

# Benchmark Groups and Categories

## Institutional Carnegie Classification

*Research (R1&R2), Doctorate/Professional (R3), Comprehensive (M1,M2,M3), Baccalaureate (B1,B2)*

## Highest Degree Awarded

*Doctoral/Professional, Master's, Bachelor's, Non-Degree*



## Proportion of Undergraduate Degrees

*0-24% UG, 25-49% UG, 50-74% UG, 75-100% UG*



# Type of Reports Available



Institution Reports



Benchmark Reports



Cost Study Reports



# Uses of The Cost Study

- Instructional cost and faculty workload comparisons
- Academic program reviews
- Higher education accreditation
- Consortia groups and state-level reports

# Cost and Faculty Workload Comparisons

## Cost and Productivity Dashboard

2022 Study Cycle (2021-2022 Academic Year)

Filter selections include the following College of Arts and Humanities CIPs:

- 9.01 Communication Studies
- 23.01 English
- 45.10 Political Science
- 50.05 Theatre
- 50.09 Music
- 54.01 History

Use Filters to Change College Grouping and Faculty Type

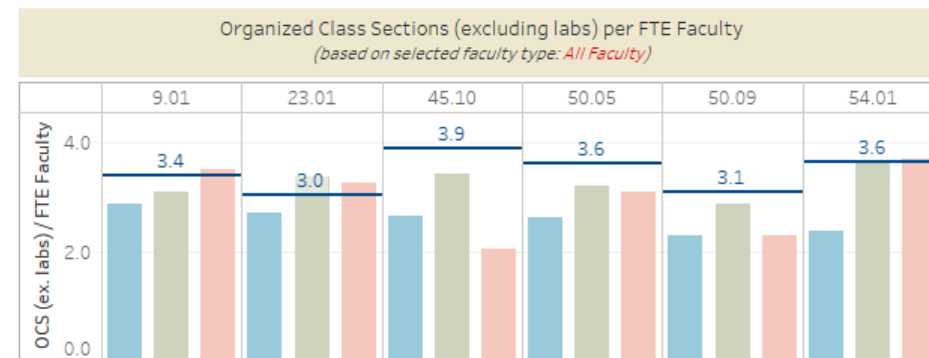
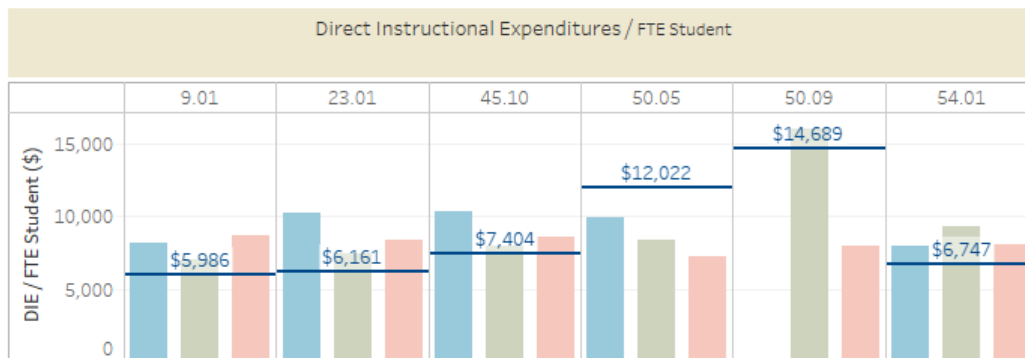
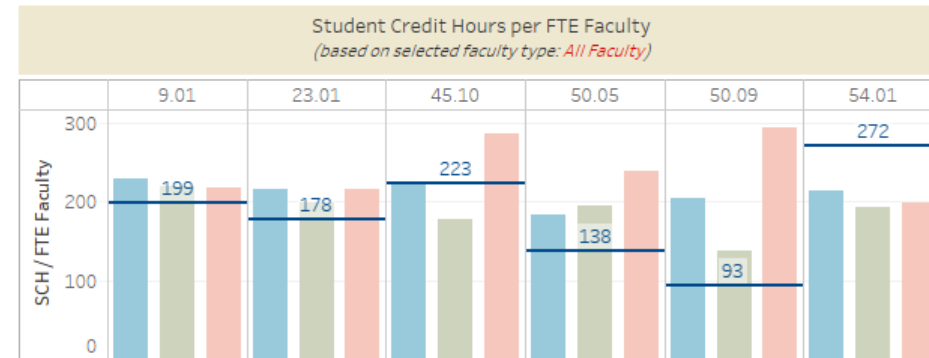
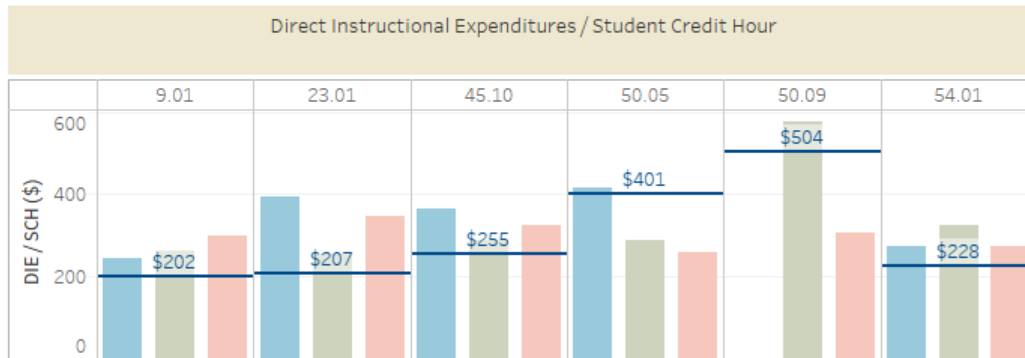
College

College of Arts and Humanities

Faculty Type

All Faculty

- Institution
- Carnegie Norm
- High Degree Norm
- % Undergrad Norm



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# Cost and Faculty Workload Comparisons

## Program Details Dashboard

2022 Study Cycle (2021-2022 Academic Year)

Use Filters to Change Program and Faculty Type

Program Name  
Accounting

Faculty Type  
T/TT Faculty

Selected Program:

**Accounting (52.03)**

Degrees Awarded: Bachelor's, Masters

% of degrees offered at undergrad level: 89%

Total Faculty in Program: 11.00 FTE

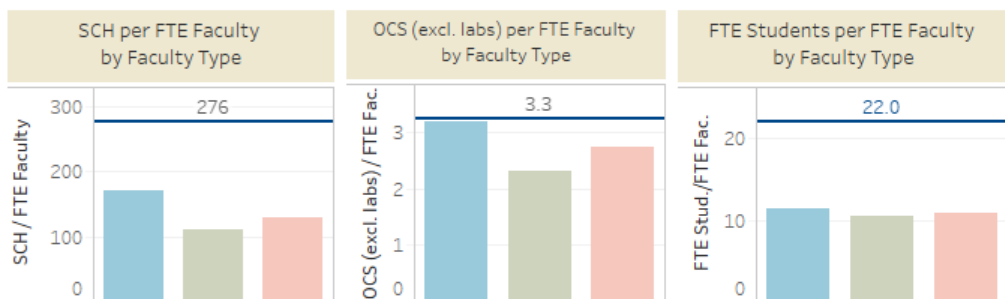
Total Instructional Faculty: 11.00 FTE

T/TT Faculty as a % of the Total Faculty: 73%

- Institution
- Carnegie Norm
- High Degree Norm
- % Undergrad Norm

## Faculty Productivity

Instructional Faculty for T/TT Faculty: 8.00 FTE



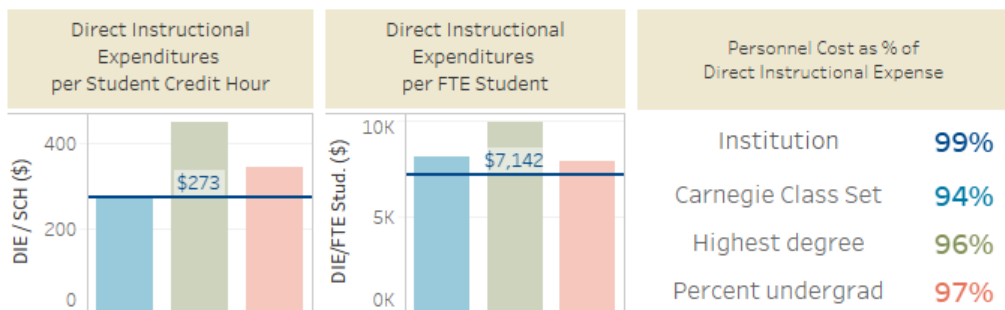
## Percent of each course level taught by T/TT Faculty

Based on selected faculty type. No data is available for the "All Faculty" filter option

	% Lab/Discussion Sections	% Lower Division Sections	% Upper Division Sections	% Undergrad Sections	% Grad Sections
Institution	%	57%	75%	67%	75%
Carnegie Class Set	%	45%	57%	46%	62%
Highest degree	31%	20%	31%	29%	57%
Percent undergrad	50%	55%	63%	59%	51%

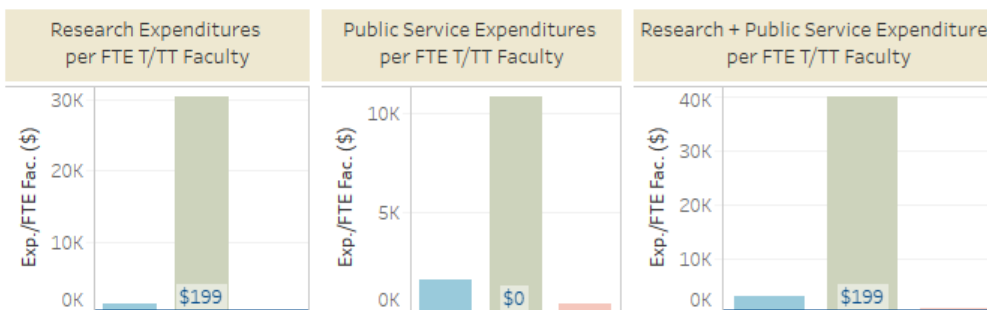
## Instructional Costs

Does not vary by faculty type



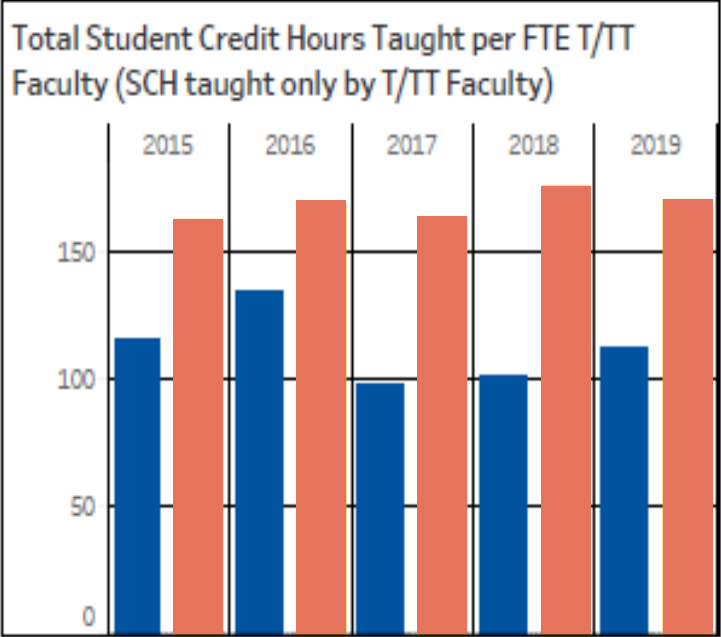
## Research and Public Service Expenditures

Does not vary by faculty type

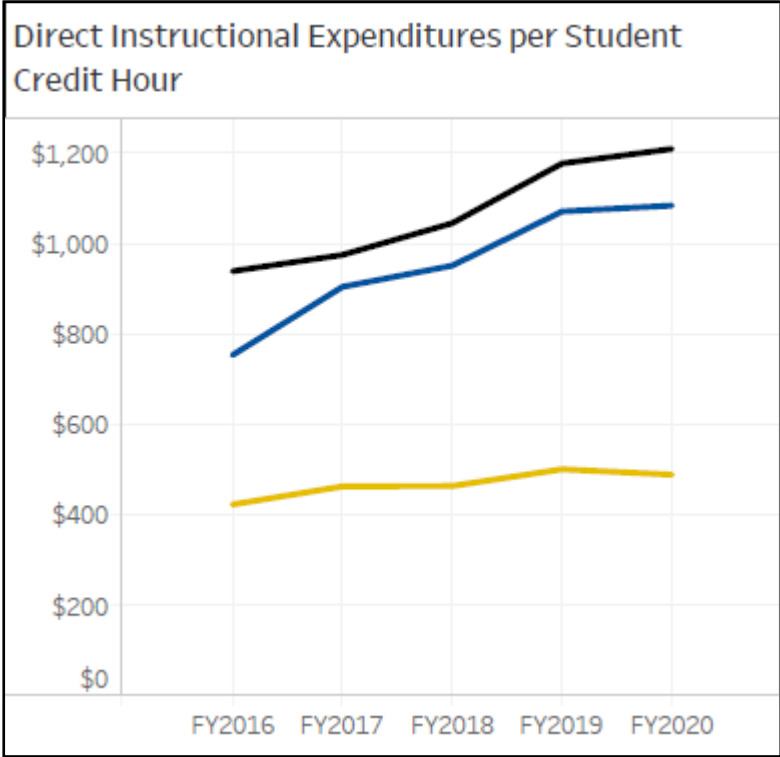


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# Academic Program Reviews

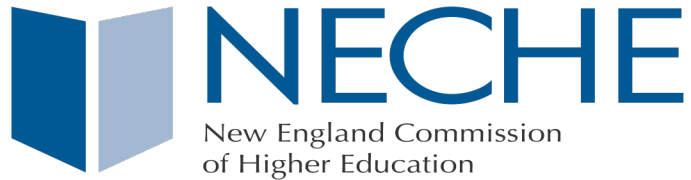


■ Institution Program  
■ Carnegie Norm



— College Average  
— Institution Program  
— Institution Average

# Accreditation



Standard 2.6



CFR 2.4; 3.10; 4.1

Institutional planning and effectiveness process involves all **programs**, services, and constituencies; is linked to the **decision-making process** at all levels; and provides a sound basis for **budgetary decisions and resource allocations**



Standard 4A(1), 5A(2)



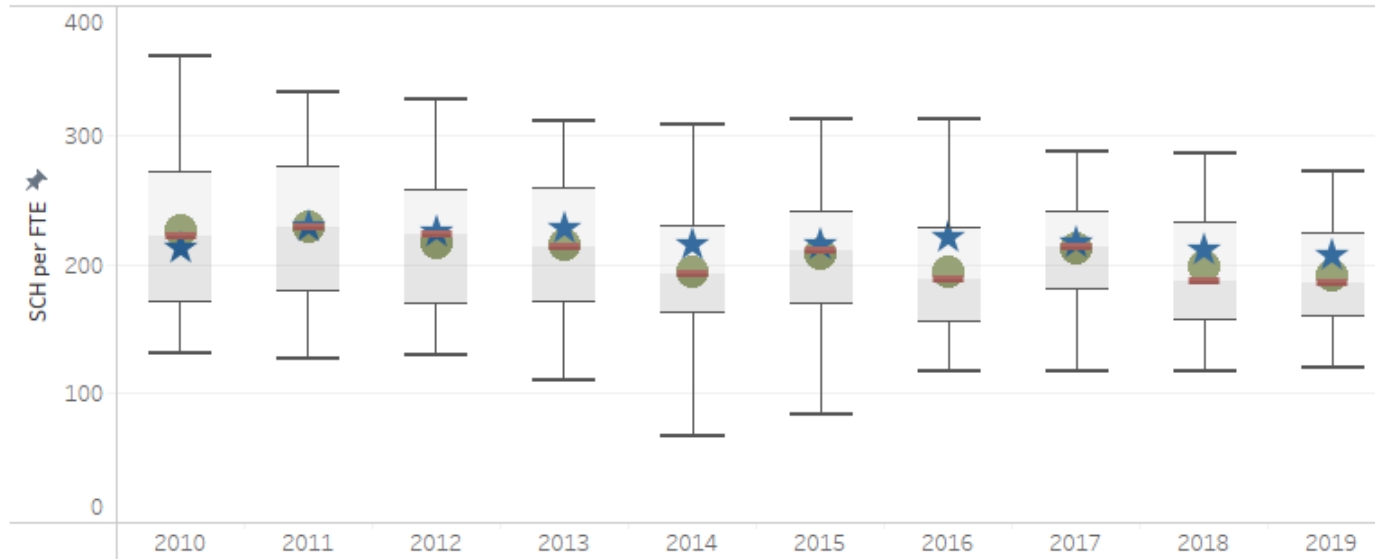
Standard VI (5)



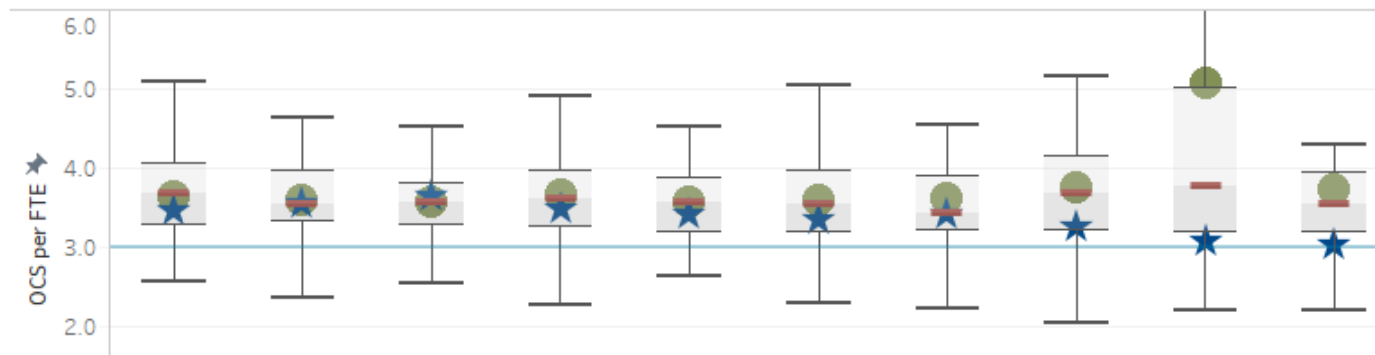
Standard 1.B.2

# Consortia Group and State Level Reports

Student Credit Hours per FTE Faculty (All Faculty Types)



Organized Class Sections per FTE Faculty (All Faculty Types)



# Using the Cost Study to Inform Funding Models

- Decisions about funding increases and decreases in instructional activity (e.g., UNC System Office)
- Compare costs and productivity within the state system *and* against comparators outside of the system
- Differential tuition conversations
- Holistic approach
  - Understanding program-level differences
  - Four primary cost drivers
  - Data storytelling—the relationship between instructional costs and productivity metrics

# UNC System Office Funding Model

- Annual workload metric report
- 2018 & 2022 UNC enrollment funding model
  - Funding the increase/decrease in SCH compared to the prior year
  - DIE/SCH metric – 2-digit, 3-year-average (by benchmarking category)
  - Additional components unrelated to The Cost Study data

$$\text{Subsidy \$\$} = \left( \left[ \text{DIE/SCH} + \text{UNC Overhead/SCH} \right] \times \text{UNC \%} \right) \times \pm \text{SCH from prior year}$$



# NJ Office of the Secretary of Higher Education

- Purpose
  - Obtain institution and benchmarking data for various initiatives and planning/policy activities, including improving their outcomes-based funding model
- Terms of Agreement
  - Enrolled all 4-yr public NJ institutions in the 2021 and 2022 cycles
  - NJ OSHE covered participation fees; institutions submitted their own data
- Reports for NJ OSHE
  - Identifiable raw data submissions from the NJ institutions
  - Identifiable institution reports (calculated metrics)
  - Standard set of benchmarking reports
  - Custom state dashboards

# Opportunities for Participation and Access

- System Offices can gain access to comparative data sets by committing their 4-year public institutions to the study
- Data Reports Available to System Offices
  - De-identified comparative data sets (National Norms)
  - Identifiable state data sets (raw data submission and calculated metrics) w/a data-sharing agreement
  - Customizable state-level reports (may require an additional fee)

# Pricing Options for Member Institutions

	<b>R1:</b> Doctoral Universities – Very high research activity	<b>R2:</b> Doctoral Universities – High research activity	<b>D/PU:</b> Doctoral/Professional Universities <b>M1:</b> Master's Colleges and Universities – Larger programs	<b>M2:</b> Master's Colleges and Universities – Medium programs <b>M3:</b> Master's Colleges and Universities – Smaller programs <b>B1:</b> Baccalaureate Colleges: Arts & Sciences Focus <b>B2:</b> Baccalaureate Colleges: Diverse Fields
<b>One Year (2023 Cycle)</b>	\$3,000	\$2,800	\$2,100	\$1,700
<b>Two Years (2023 and 2024 Cycles), 15% Discount</b> The total for two years must be paid in full in order to receive the discount.	\$5,100 (\$2,550/year)	\$4,760 (\$2,380/year)	\$3,570 (\$1,785/year)	\$2,890 (\$1,445/year)
<b>Non-Participant Access</b> This option is for new participants to The Cost Study. NPA institutions gain access to the comparative reports from the most recent study year (the 2022 cycle) without having had submitted data to the study. They then commit, with a signed agreement, to act as a full participant in the current study year (the 2023 cycle). You must have prior approval from ire-cost@udel before registering with this option.	\$8,000	\$7,800	\$7,100	\$6,700
	(Fee includes 2022 data and 2023 One Year participation)			
<b>Customized Solutions</b> All requests for specialized custom analyses and special data requests will be considered on a case-by-case basis. The cost will be determined at the time of request and will be based on the difficulty of the request.	Email ire-cost@udel.edu for pricing			

Jen Snyder, *Director of HEC*

Marcia Preston, *Manager of The Cost Study*

Allison Dunckel, *Member Outreach Coordinator*

Website: **[ire.udel.edu/cost/](http://ire.udel.edu/cost/)**

The Cost Study email address: **[ire-cost@udel.edu](mailto:ire-cost@udel.edu)**



# DETERMINING THE COST OF COMMUNITY COLLEGE IN TEXAS

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MAKING  
RESEARCH  
RELEVANT

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Bruce Baker (University of Miami) | Jesse Levin (American Institutes for Research)

September 19, 2023

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# Agenda

- Introduction to Texas Community College Funding
- Methodology Used to Investigate Community College Funding in Texas
- Results from Texas Research
- Questions and Answers

# Introduction to Texas Community College Funding

# Texas community college context

- Second largest state in terms of community college enrollment
- Approximately 50 community colleges that vary widely with respect to:
  - Size
  - Geographic Location
  - Types of Students Served
  - Programs Offered
- State operates a performance-based funding system based on a variety of *success points milestones*:
  - Passing a college-level course
  - Earning 15 or 30 credit hours
  - Attaining a credential
  - Transferring to a four-year institution



# Need for investigating community college costs in Texas

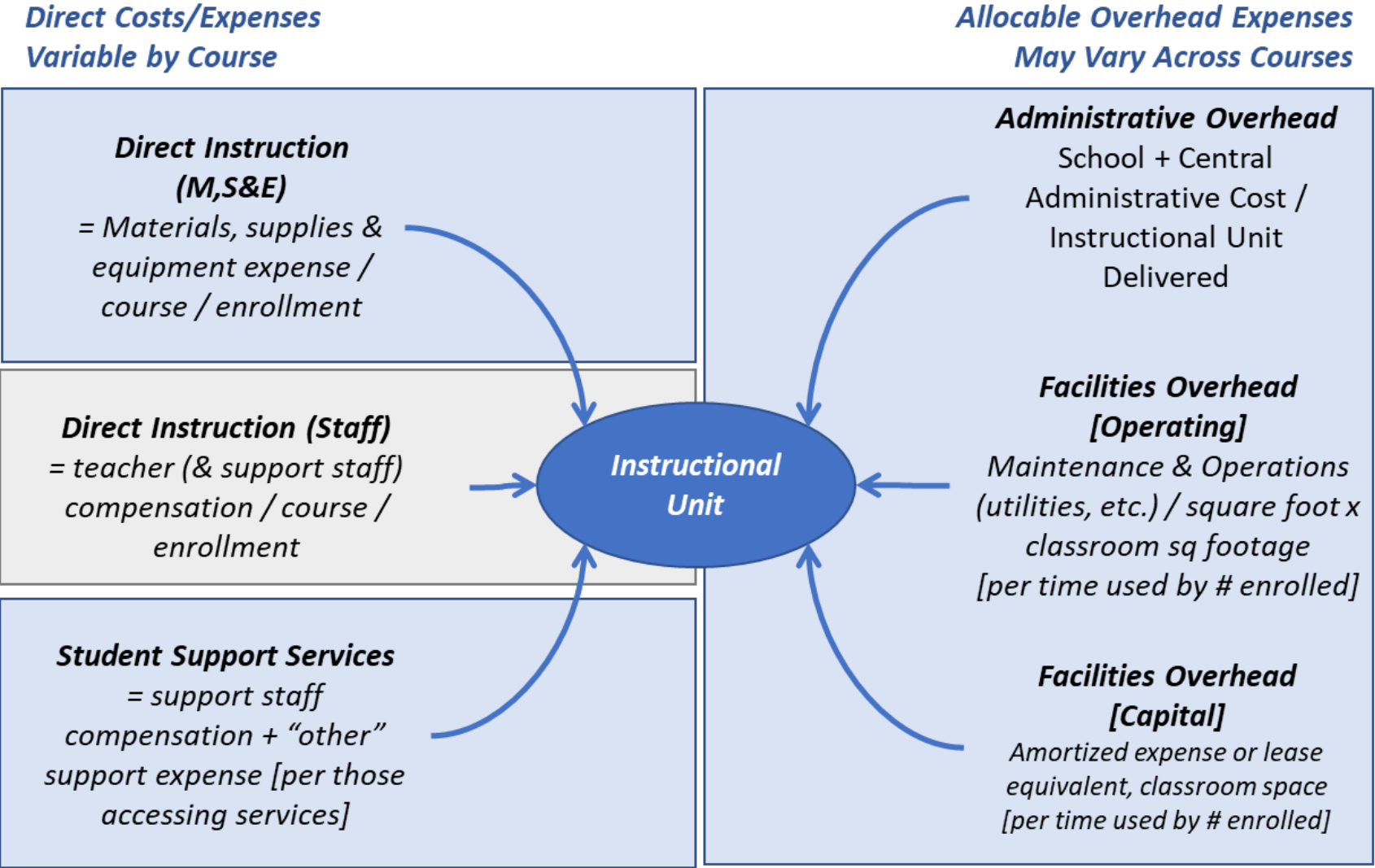
- Texas Commission on Community College Finance convened to make recommendations regarding state funding formula and funding level for Texas community colleges.
- The Texas Higher Education Coordinating Board (THECB) was interested in using data-driven evidence to make decisions about how to fund community colleges.
- There was a need for rigorous analyses of the degree to which the current system used to fund Texas community colleges is equitable and based on the differential costs associated with producing outcomes for different types of students.
- The findings from our research were intended to inform this legislative policy debate surrounding community college funding.

# Methodologies Used to Investigate Community College Funding in Texas

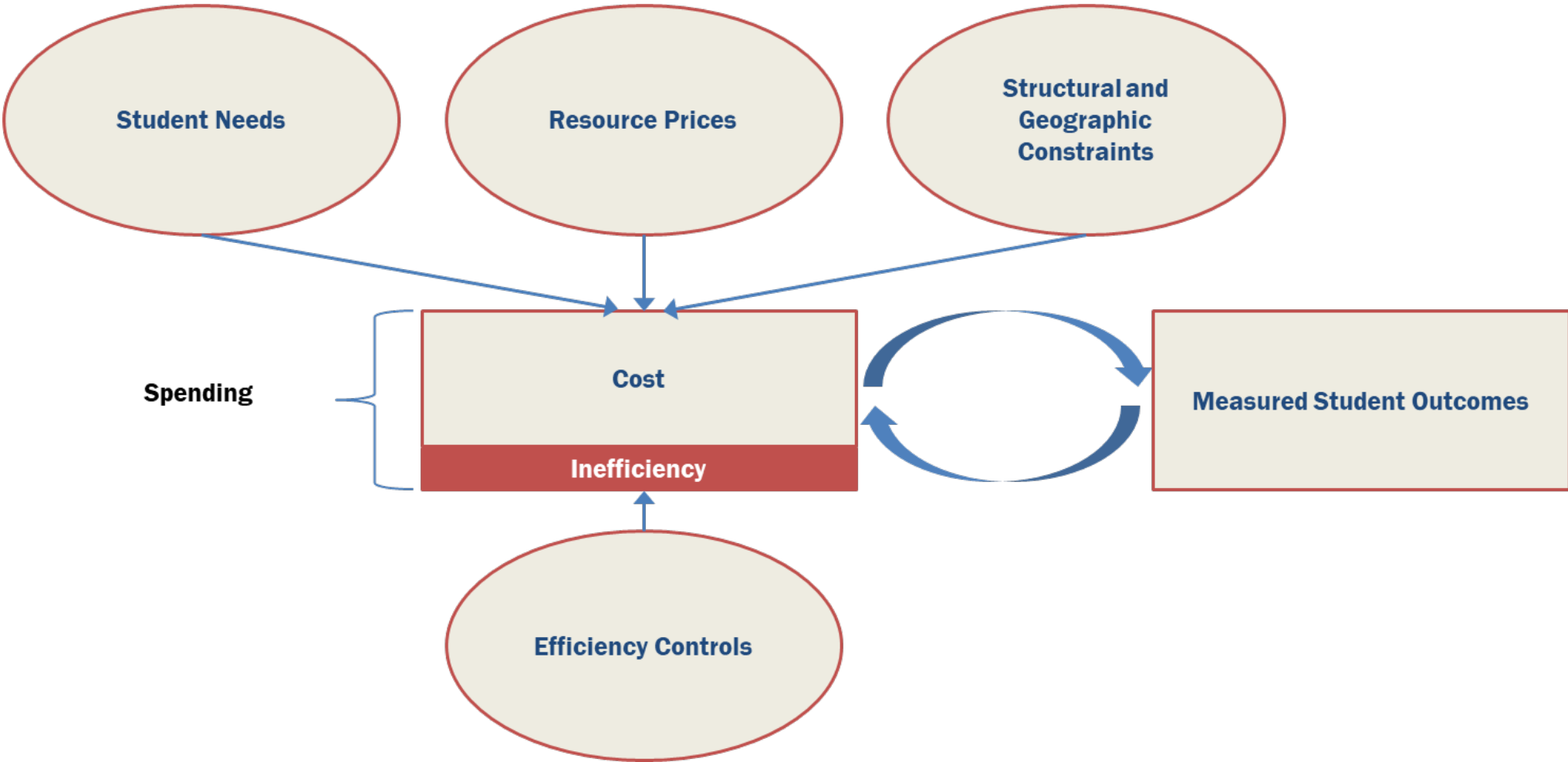
# Introduction to cost analysis methodologies

- Our research agenda draws upon methods used for decades to examine costs in K-12 education to inform policy focused on the provision of adequate and equitable funding (Baker & Levin, 2019).
- Two general approaches to cost analysis:
  - **Input Oriented** – Determine the personnel and non-personnel resources and corresponding costs associated with the educational services used to generate student outcomes. [Ingredients Method (Levin et al., 2018; Baker & Morphey, 2007)]
  - **Outcome Oriented** – Evaluate aggregated spending per-student as a function of student outcomes and several cost factors including needs, labor price levels, scale of operations and other institutional characteristics. [Education Cost Function Analysis (Duncombe & Yinger, 2011; Levin et al., 2022)]

# Illustration of input-oriented approach to cost analysis



# Illustration of outcome-oriented approach to cost analysis



# Comparison of input- and outcome-oriented approaches

	Input-Oriented	Outcome-Oriented
<b>Data Needs</b>	Requires detailed data on staff, institutional spending and student course enrollments	Requires campus-level aggregate data on spending per student, student outcomes and cost factors associated with student needs and institutional characteristics
<b>Analysis Needs</b>	Involves descriptive analysis of granular data	Involves conditional regression modelling of aggregated data that attempts to control for institutional efficiency and simultaneous determination of outcomes and spending
<b>Applicability and Limitations</b>	<ul style="list-style-type: none"> <li>• Can be applied to any community college system or individual community college where required data on staff, spending and enrollment can be merged</li> <li>• Obtaining detailed information on spending devoted to indirect supports for students is challenging and often requires primary data</li> <li>• Not particularly useful for developing funding formulas or high-level funding policy</li> </ul>	<ul style="list-style-type: none"> <li>• Can only be applied in cases where there are enough community colleges to support a regression analysis (e.g., cannot be applied in states with few colleges)</li> <li>• Method does not provide information on <i>how</i> resources are used by colleges, only on how aggregate spending relates to outcomes and cost factors</li> </ul>
<b>Strengths</b>	<p>Provides detailed information on the following:</p> <ul style="list-style-type: none"> <li>• Cost of course combinations (pathways) taken to achieve outcomes</li> <li>• How costs vary both within and across different outcomes</li> <li>• How pathways and their costs are associated with specific student needs</li> </ul>	<p>Provides direct empirical evidence for constructing need &amp; cost based simulations and formulas:</p> <ul style="list-style-type: none"> <li>• Provides estimates of “base” funding needed for achieving desired outcomes for the average student</li> <li>• Generates need weights to be applied to student population characteristics</li> <li>• Yields additional cost weights for addressing economies of scale and regional wage variation</li> </ul>

# Input-Oriented Analysis of Texas Community College Costs

# Research questions

1. What is the distribution of credentials awarded by Texas community colleges across type (Associates Degree, Core Curriculum Completer, Certificate, etc.)?
2. What are the most prevalent majors for those Associate Degrees that are awarded?
3. How are the most prevalent Associate Degrees awarded distributed according to student gender, age and race/ethnicity?
4. What are the average costs of the most prevalent Associate Degrees awarded and to what extent do these costs vary?



# Study data

- Student and staff data from the Education Research Center at the University of Texas at Dallas
  - Student-level data on demographics, courses taken, and graduation status
  - Staff-level data on salaries
- Institutional expenditure data from the Texas Higher Education Coordinating Board
  - Report of Fundable Operating Expenses
- Institutional expenditure data from the individual community colleges
  - Annual Financial Reports received for approximately 30 of the 50 community colleges

# Results: Distribution of Texas community college credentials in 2020-21

Credential Type	Number of Credentials Awarded	Share of Credentials Awarded
Associate Degree	91,548	46.7%
Core Curriculum Completer	56,811	29.0%
Certificate	36,340	18.6%
Field of Study Completer	9,680	4.9%
Bachelor's Degree	853	0.4%
Advanced Technology Certificate	525	0.3%
Enhanced Skills Certificate	74	0.0%
Total	195,831	100.0%

# Results: Distribution of associate degrees awarded by major in 2020-21

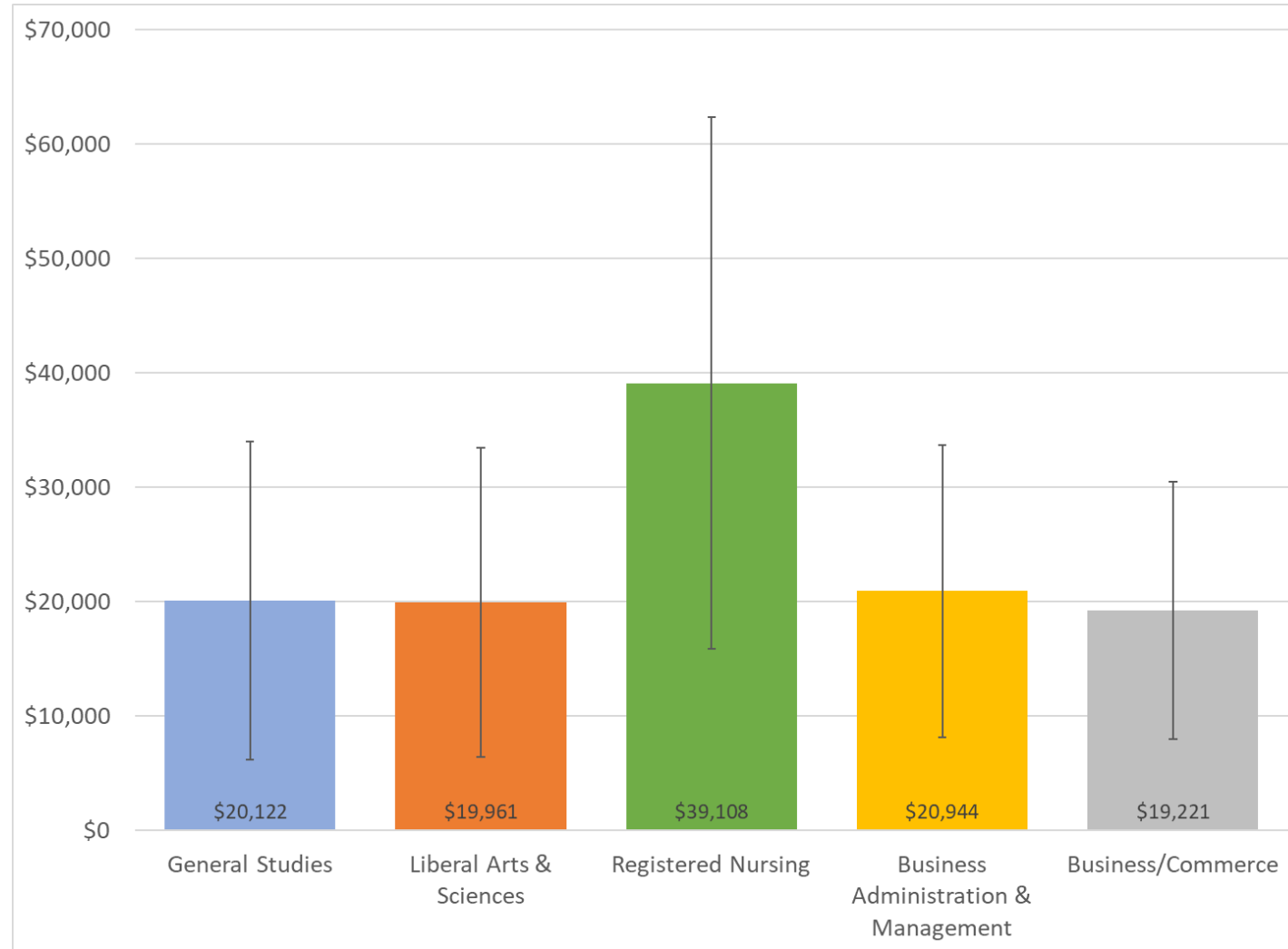
Highest/Lowest Prevalence	Major	Associate Degrees Awarded	Share of Associate Degrees Awarded	Cumulative Share of Associate Degrees Awarded
Highest Prevalence	General Studies	39,237	43%	43%
	Liberal Arts & Sciences	10,936	12%	54%
	Registered Nursing	5,552	6%	60%
	Business Administration & Management	3,092	3%	64%
	Business/Commerce	2,704	3%	67%
Lowest Prevalence	Early Childhood Education & Teaching	1,790	2%	69%
	Criminal Justice/Safety Studies	1,401	2%	70%
	Biological Sciences	1,368	1%	72%
	Teacher Education	1,064	1%	73%
	Chemical Technology	1,052	1%	74%
	Psychology	900	1%	75%
	Other	22,452	25%	100%
Total		91,548	100%	—

# Results: Shares of student groups and average age of students awarded associate degrees by major in 2020-21

	General Studies	Liberal Arts & Sciences	Registered Nursing	Business Administration & Management	Business/Commerce	Highest Prevalence Majors
Female	65.9%	66.5%	86.7%	61.9%	58.8%	67.4%
Male	34.1%	33.5%	13.3%	38.2%	41.3%	32.6%
Asian	5.8%	5.9%	5.1%	5.6%	5.6%	5.7%
Black	11.6%	9.6%	11.8%	17.5%	6.7%	11.4%
Hispanic	48.5%	52.5%	38.2%	40.1%	57.2%	48.1%
White	27.7%	26.0%	40.6%	26.8%	24.7%	28.5%
Other Race	6.5%	6.0%	4.3%	10.0%	5.8%	6.3%
Average Age	22.7	22.3	29.6	28.2	24.1	23.7

Note: Highest shares highlighted in green and lowest shares highlighted in yellow.

# Results: Average cost per associate degree awarded by major in 2020-21



Note: Bars denote range bounding the average cost per associate degree for each major (equal to +/- 1.96 times standard deviation).

# Results: Coefficient of variation of associate degree cost distributions by major in 2020-21

Major	Average	Standard Deviation	Coefficient of Variation
General Studies	\$20,122	\$7,099	0.353
Liberal Arts & Sciences	\$19,961	\$6,890	0.345
Registered Nursing	\$39,108	\$11,866	0.303
Business Administration & Management	\$20,944	\$6,521	0.311
Business/Commerce	\$19,221	\$5,741	0.299

# Discussion

- Disclaimer: This work is currently in progress and there is still much to be done!
- The main cost findings suggest that there is significant variation in the costs of producing the five most prevalent associates degrees awarded to Texas community college students.
- The combinations of courses taken to complete a given type of associates degree were vast implying there are a number of more and less expensive routes.
- Future research includes exploring cost implications of the different courses taken and how subsequent costs may be associated with different student and institutional characteristics.

# Outcome-Oriented (Cost Function) Analysis of Texas Community Colleges



# Research questions

1. Which student need factors are most strongly associated with college outcomes?
2. To what extent does institutional spending vary with respect to differences in student need factors and institutional contextual factors?
3. What spending levels are associated with success point milestones earned by students with different needs attending community colleges in different contexts?
4. Do student outcomes improve as the gap between projected adequate cost and actual spending narrows?
5. How does the size of the gap between adequate projected cost and actual spending change with respect to incidence of specific student need factors and institutional contextual factors?

# Study analyses

- **Needs analysis:** Identifies student need factors and institutional contextual factors that may be associated with student outcomes for consideration as candidates to include in the education cost function analysis.
- **Equity analysis:** Describes the degree to which community college spending per pupil varies with respect to student needs and institutional contextual factors for consideration as candidates to include in the education cost function analysis.
- **Education cost function analysis:** Determines the differential cost of providing an equal opportunity for students with different needs learning in different institutional contexts to achieve.

# Study data

- Texas Higher Education Coordinating Board: Student outcomes, needs characteristics and enrollment
- College Scorecard: Student income level
- Integrated Postsecondary Education Data System: Enrollment of local competing institutions, faculty salaries, and institutional location
- School Finance Indicators Database: Median household income and housing value, population density, and incidence of K–12 students with disabilities

# Results: Needs analysis

Negative relationships were found between student outcomes and the following: percentages of first-generation college students, academically disadvantaged students, students older than 24, English learner students, and students who attend medium-sized community colleges.

Student need factor or institutional contextual factor	Success points milestones earned per full-time equivalent student	
	Coefficient	
<b>Need factor</b>		
Percentage of students who are first-generation college students	-2.016***	
Percentage of students who are from households earning less than \$30,000	0.084	
Percentage of students who are academically disadvantaged	-0.188**	
Percentage of students who are older than 24	-0.391*	
Percentage of students who are English learner students	-0.345**	
Percentage of students who are enrolled in dual-credit programs	0.142	
<b>Contextual factor</b>		
Fewer than 4,001 students enrolled <sup>1</sup>	-0.100	
4,001–30,000 students enrolled <sup>1</sup>	-0.080*	
Local population density	-0.005	
Constant	3.395***	
<b>Number of observations</b>		
	300	
<b>R<sup>2</sup></b>		
	0.541	

\* Significant at  $p < .05$ . \*\* Significant at  $p < .01$ . \*\*\* Significant at  $p < .001$ .

<sup>1</sup> Reference group is a community college with enrollment greater than 30,000 students.

# Results: Equity analysis

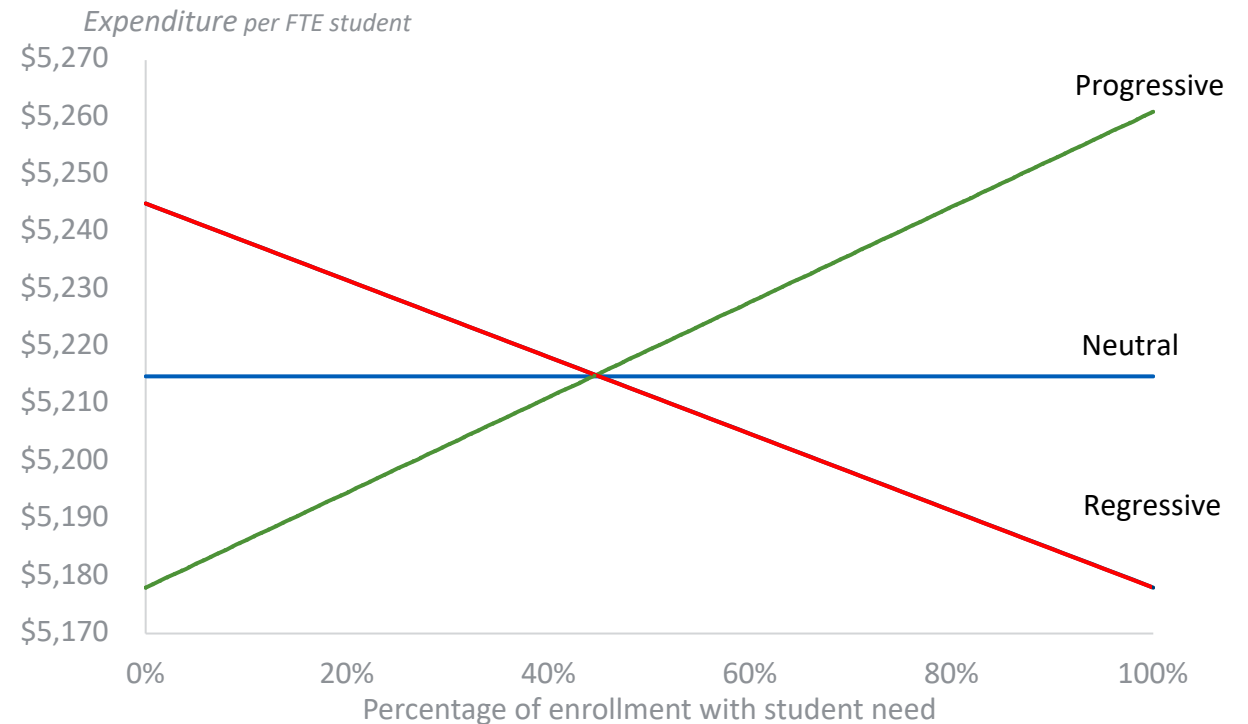
- Negative relationships were found between spending and the following: percentages of students who are academically disadvantaged and students who participated in dual-credit programs.
- Positive relationships were found between spending and the following: percentages of first-generation college students, economically disadvantaged students, students older than 24 years, English learner students, students who attend small or medium-sized community colleges, and competitor faculty salaries.

Student need factor or institutional contextual factor	Expenditures per full-time equivalent student	
	Coefficient	
<b>Need factor</b>		
Percentage of students who are first-generation college students	4,263.74*	
Percentage of students who are from households earning less than \$30,000	2,803.16**	
Percentage of students who are academically disadvantaged	-4,284.23***	
Percentage of students who are older than 24	14,461.58***	
Percentage of students who are English learner students	3,761.93**	
Percentage of students who are enrolled in dual-credit programs	-3,748.80*	
<b>Contextual factor</b>		
Fewer than 4,001 students enrolled <sup>1</sup>	1,629.69***	
4,001–30,000 students enrolled <sup>1</sup>	1,000.13***	
Local population density	-17.49	
Monthly faculty salary (\$10,000s) in local market	1,463.15*	
Constant	-675.09	
<b>Number of observations</b>		
	300	
<b>R<sup>2</sup></b>		
	0.477	

\* Significant at p < .05. \*\* Significant at p < .01. \*\*\* Significant at p < .001.  
<sup>1</sup> Reference group is a community college with enrollment greater than 30,000 students.

# A note on equity

- Relationships between spending and student needs can be progressive/regressive or neutral:
  - Progressive: tendency for higher spending at colleges with higher student needs
  - Regressive: tendency for lower spending at colleges with higher student needs
- A progressive relationship between spending and student needs does not necessarily imply that all students are provided a level of funding that allows for an equal opportunity to achieve.



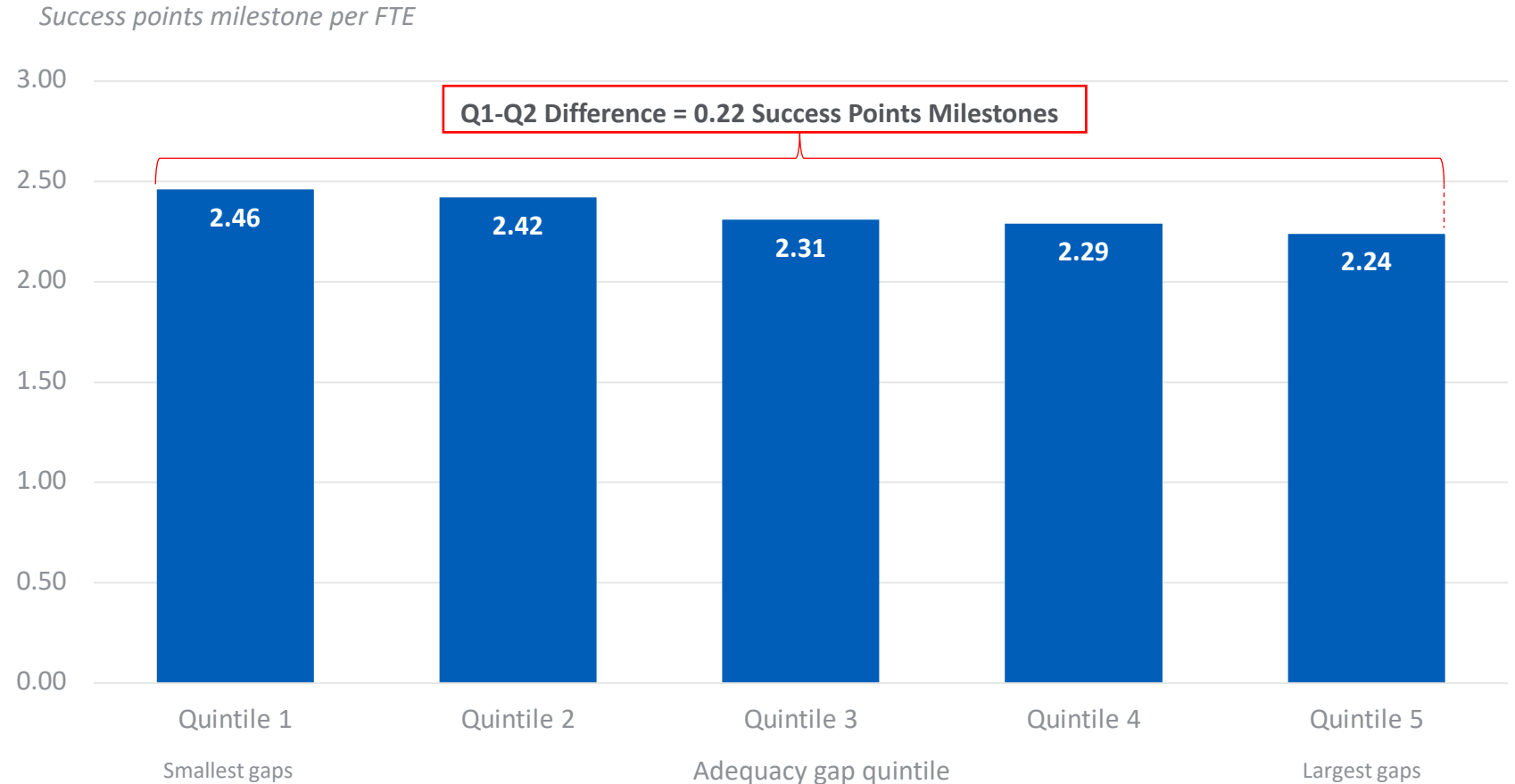
# Results: Education cost function analysis

- The cost of achieving statewide average outcomes for a student with no needs attending a large-sized community college was \$4,537 (base per-student cost).
- To provide an equal opportunity to achieve the statewide average outcomes:
  - Students who are older than 24 years and first-generation college students cost more than twice as much as the estimated base per-student cost.
  - Students from low-income households, English learner students, and students attending small or medium-sized colleges cost 18 to 31 percent more than the estimated base per-student cost.
  - Students participating in dual-credit programs cost 16 percent less than the estimated base per-student cost.
- Example: It would cost 149 percent more for a first-generation college student with no additional need factors who attends a small college to have the same opportunity to earn success points milestones, or \$14,460 (equal to  $\$4,537 \times 2.49 \times 1.28$ ).

Student need factor or institutional contextual factor	Expenditure per full-time equivalent student	Weight
<b>Need factor</b>		
Percentage of students who are first-generation college students	2.49	
Percentage of students who are from households earning less than \$30,000	1.31	
Percentage of students who are older than 24	2.63	
Percentage of students who are English learner students	1.19	
Percentage of students who are enrolled in dual-credit programs	0.84	
<b>Contextual factor</b>		
Fewer than 4,001 students enrolled	1.28	
4,001–30,000 students enrolled	1.18	
Base per-student cost (constant)	\$4,536.86	

# Results: Adequacy gaps and outcomes

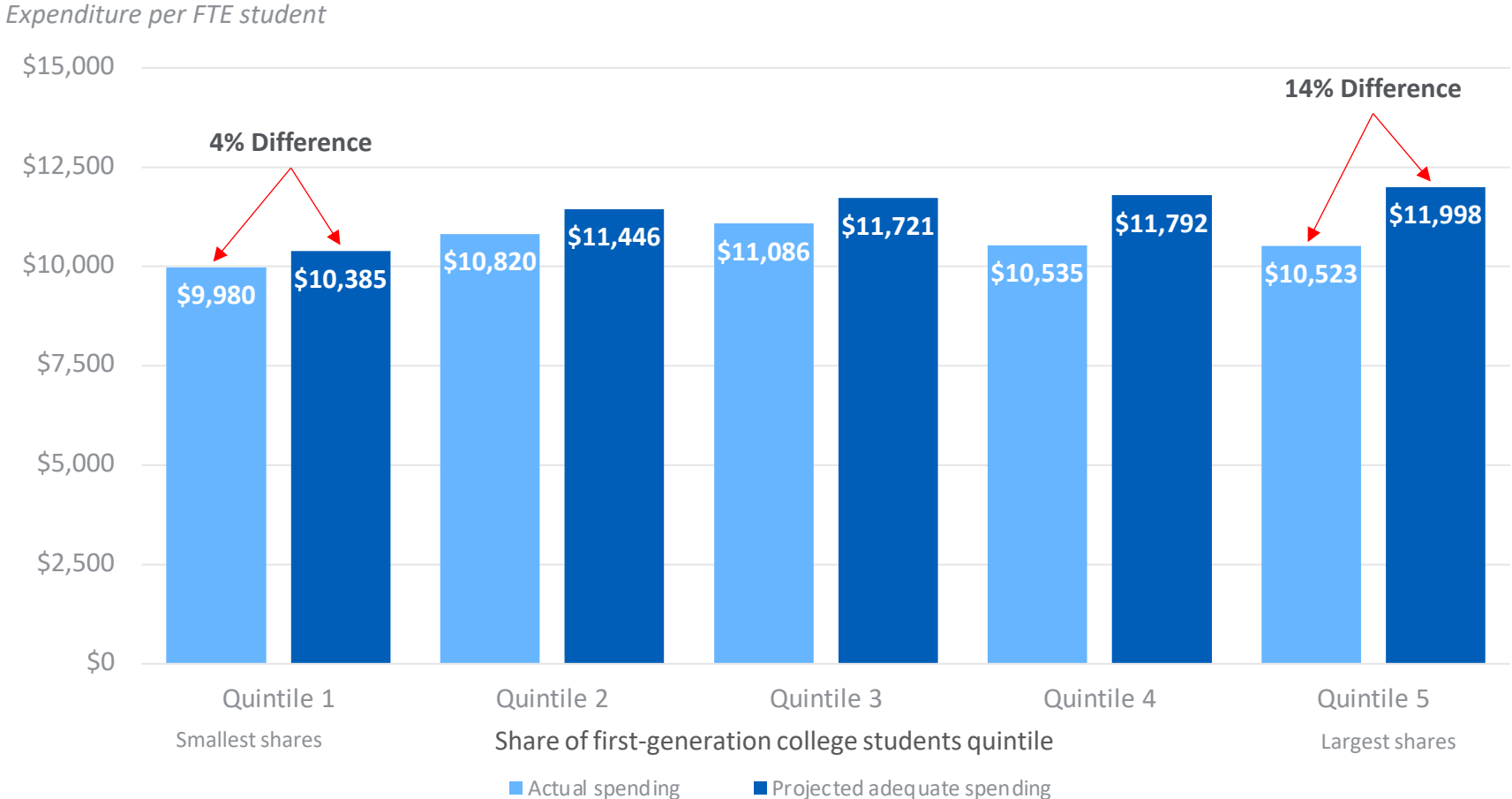
- Colleges with larger differences between projected adequate cost and actual spending (adequacy gaps) had lower outcomes measured as fewer success points milestones per full-time equivalent student than colleges with smaller adequacy gaps.





# Results: Student needs factors and outcomes

- Actual spending levels among colleges with higher shares of first-generation college students tended to be further below their projected adequate cost compared with colleges with lower percentages of first-generation students.



# Implications of findings

- The study found that Texas's current funding system is progressive in some respects, as demonstrated by higher per-student spending in community colleges serving higher percentages of first-generation college students, English learner students, and students older than 24.
- However, the additional amount of spending for students with these characteristics may not be enough to provide an equal opportunity for their students to meet statewide average success points milestones.
- Funding adjustments for particular student needs and institutional contextual factors should be considered to improve the adequacy and equity with which funding for Texas community colleges is allocated.

# Simulator tool: Funding projections made easy



Regional Educational  
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## Texas Community College Funding Simulator Tool v1.0 (TX-CCFS) User Guide

*Jesse Levin, Bruce Baker, Jason Lee, Drew Atchison, and Robert Kelchen*

October 2022

This guide provides user documentation for the Texas Community College Funding Simulator Tool (TX-CCFS) v1.0. The tool is designed to emulate community college per-student funding projections using a formula derived from the REL Southwest report *An Examination of the Costs of Texas Community Colleges*.

# Simulator tool: Customizable weights

- Texas policymakers can use the Texas Community College Funding Simulator Tool v1.0 (TX-CCFS) to consider potential changes to how community colleges are funded to ensure that institutions serving students from different backgrounds are equitably and adequately funded. The tool is capable of:
  - Emulating the community college per-student funding projections generated by the study analysis.
  - Generating alternative funding scenarios by changing key formula settings such as base per-pupil cost and funding adjustments related to student need characteristics and institution enrollment size.

A. Set Custom Funding Weights									
	Custom/Suggested Funding Weights and Base Per-Student Funding Definitions	Percent First Generation	Percent Income Less Than \$30,000	Percent Older Than 24	Percent English Learner	Percent Dual Credit	Enrollment Less Than 4,001	Enrollment Between 4,001 and 30,000	Base Per-Student Funding
A1. Set Custom Funding Weights (Use Up/Down Arrows To Adjust Values)	Custom Funding Weights	2.49	1.31	2.63	1.19	0.84	1.28	1.18	\$4,537
	<b>Suggested Funding Weights</b>	<b>2.49</b>	<b>1.31</b>	<b>2.63</b>	<b>1.19</b>	<b>0.84</b>	<b>1.28</b>	<b>1.18</b>	<b>\$4,537</b>
A2. Select Funding Weight Type (Choose From Pull-Down Menu) ----->	<b>Suggested Funding Weights</b>								

# Simulator tool: Dynamic figures of spending versus projected funding

- The simulator tool includes various dynamic figures that update when the user makes changes to the weights or base per-student cost. As an example, this chart maps projected funding and spending for each of the state's 50 community colleges and provides a dashed line as a reference that indicates when projected per-student funding and actual per-student spending are equal.

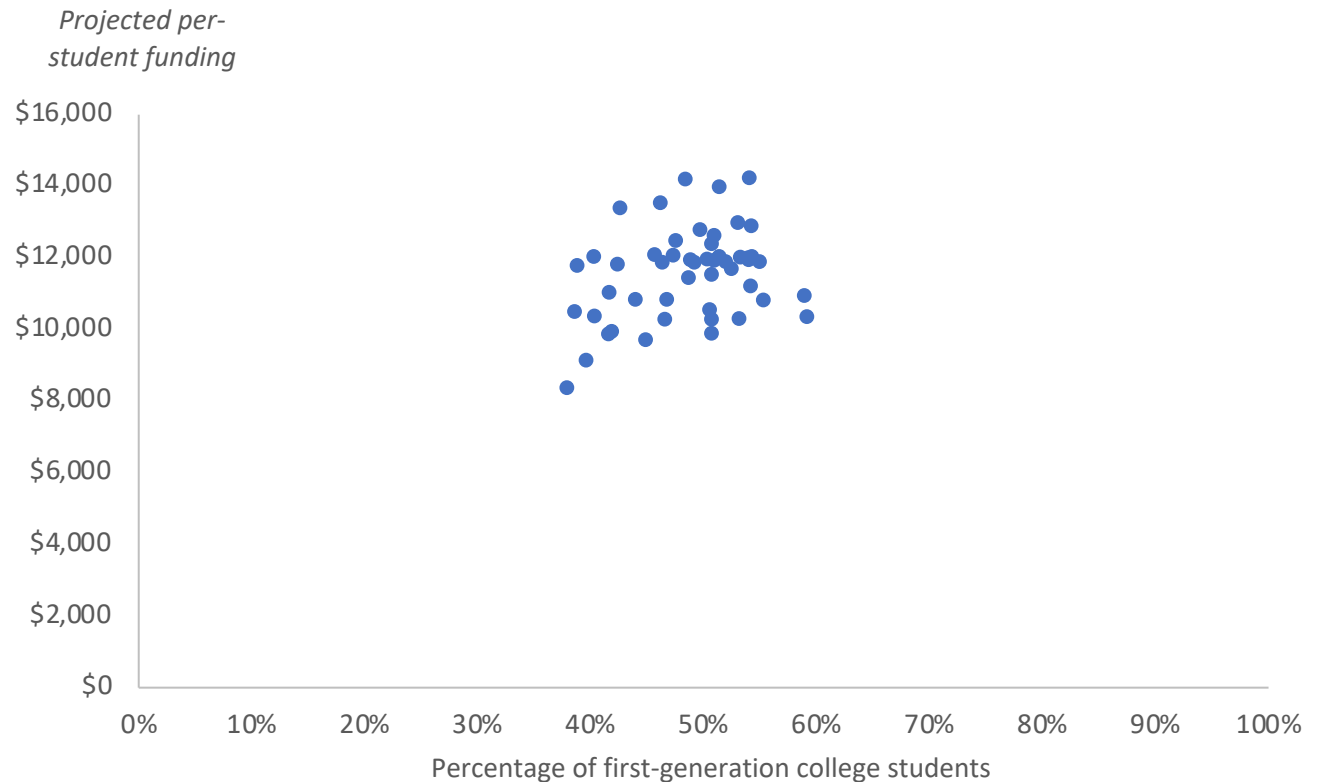
Actual per-pupil spending versus projected per-student funding for Texas community colleges, 2019/20



# Simulator tool: Dynamic figures of projected funding by student needs

- The simulator tool also produces a series of dynamic figures that plot projected per-student funding by student needs for each of the study community colleges. This example dot plot depicts projected per-student funding by the percentage of first-generation college students.

Percentage of first-generation students versus projected per-student funding for Texas community colleges, 2019/20



# Questions and Answers

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