What we have learned about community college funding in Texas

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Motivation

- Rigorous analyses are needed to determine whether the 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 this study are intended to inform legislative policy debate surrounding community college funding (Texas Commission on Community College Finance).

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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?

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Methods

- **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.

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Components of an education cost function

- Education cost functions have been used for decades to measure the differential costs of educating students in the K–12 sector, but rarely have they been applied to postsecondary education.
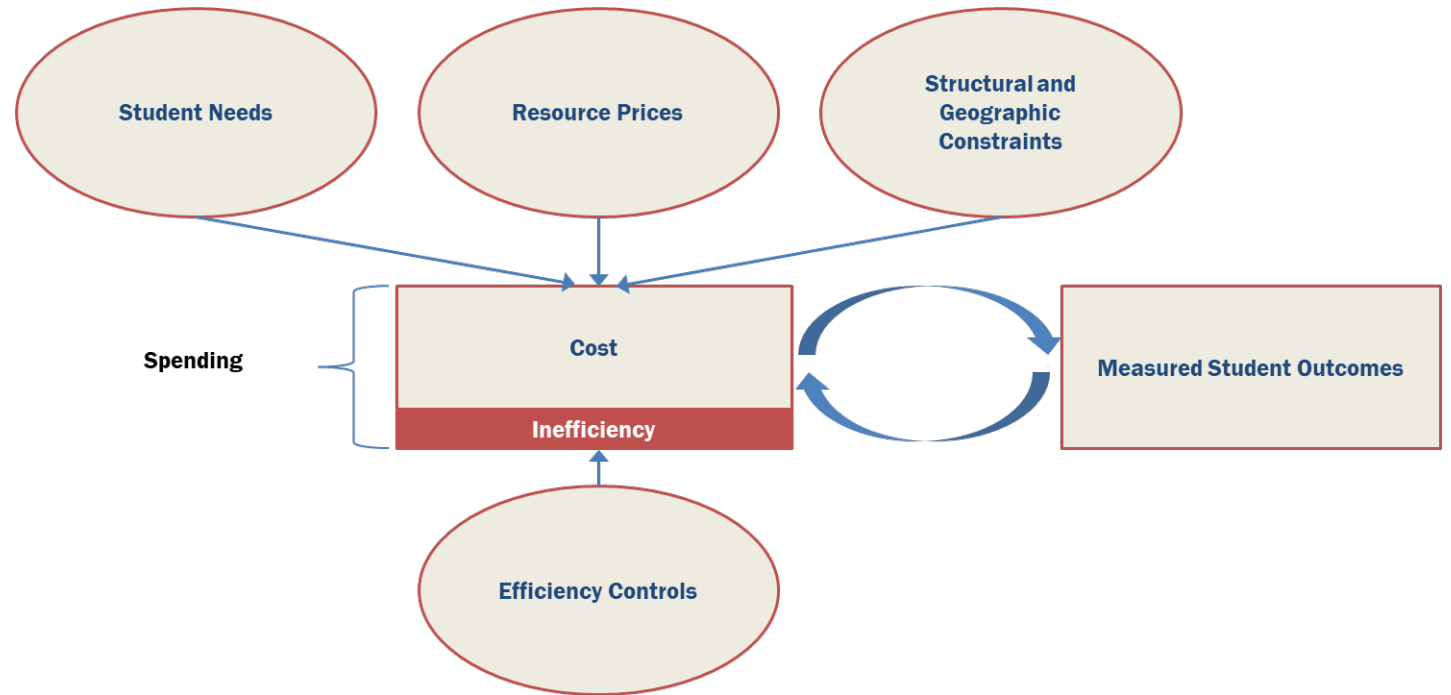
Data

- 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

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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
Need factor	
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
Contextual factor	
Fewer than 4,001 students enrolled[1]	-0.100
4,001–30,000 students enrolled[1]	-0.080*
Local population density	-0.005
Constant	3.395***
Number of observations	300
R^2	0.541

* Significant at $p < .05$. ** Significant at $p < .01$. *** Significant at $p < .001$.
[1] 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
Need factor	
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*
Contextual factor	
Fewer than 4,001 students enrolled[1]	1,629.69***
4,001–30,000 students enrolled[1]	1,000.13***
Local population density	-17.49
Monthly faculty salary ($10,000s) in local market	1,463.15*
Constant	-675.09
Number of observations	300
R^2	0.477

* Significant at $p < .05$. ** Significant at $p < .01$. *** Significant at $p < .001$.
[1] Reference group is a community college with enrollment greater than 30,000 students.

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A note on equity

- Relationships between spending and student needs can be progressive/regressive or neutral:
  - Progressive: tendency for <u>higher</u> spending at colleges with higher student needs
  - Regressive: tendency for <u>lower</u> 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 <u>equal opportunity</u> to achieve.

Expenditure per FTE student

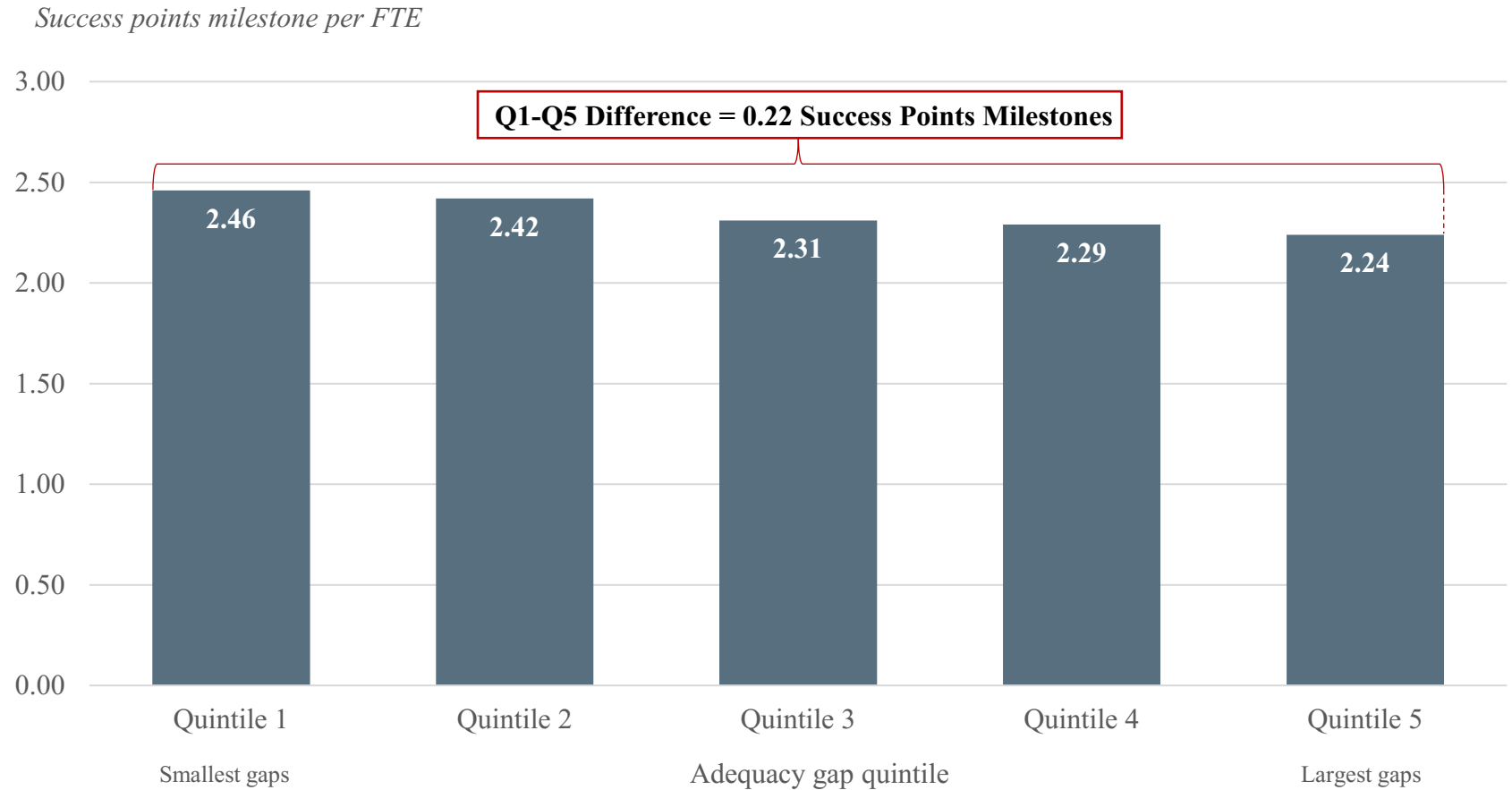Percentage of enrollment with student need
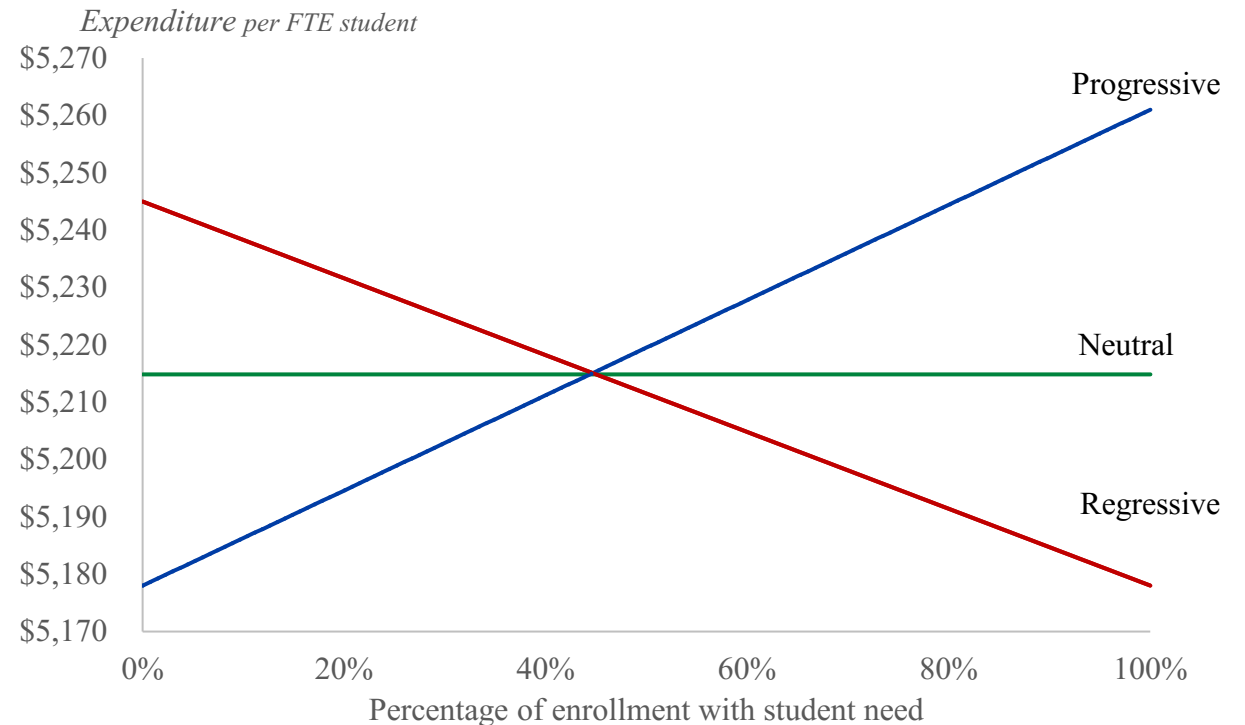
Results: Education cost function analysis

- 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 <u>cost more than twice as much</u> as the estimated base per-student cost.
  - Students from low-income households, English learner students, and students attending small or medium-sized colleges <u>cost 18 to 31 percent more</u> than the estimated base per-student cost.
  - Students participating in dual-credit programs <u>cost 16 percent less</u> than the estimated base per-student cost.

Student need factor or institutional contextual factor	Expenditure per full-time equivalent student *Weight*
Need factor	
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
Contextual factor	
Fewer than 4,001 students enrolled	1.28
4,001–30,000 students enrolled	1.18
Base per-student cost (constant)	$4,536.86

- Example: It would cost 3.19 times the base per-student cost 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 × 2.49 × 1.28).

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.

Success points milestone per FTE

Q1-Q5 Difference = 0.22 Success Points Milestones

Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
2.46	2.42	2.31	2.29	2.24

Smallest gaps — Adequacy gap quintile — Largest 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.

Expenditure per FTE student

4% Difference

14% Difference

	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Actual spending	$9,980	$10,820	$11,086	$10,535	$10,523
Projected adequate spending	$10,385	$11,446	$11,721	$11,792	$11,998

Smallest shares

Share of first-generation college students quintile

Largest shares

■ Actual spending ■ Projected adequate spending

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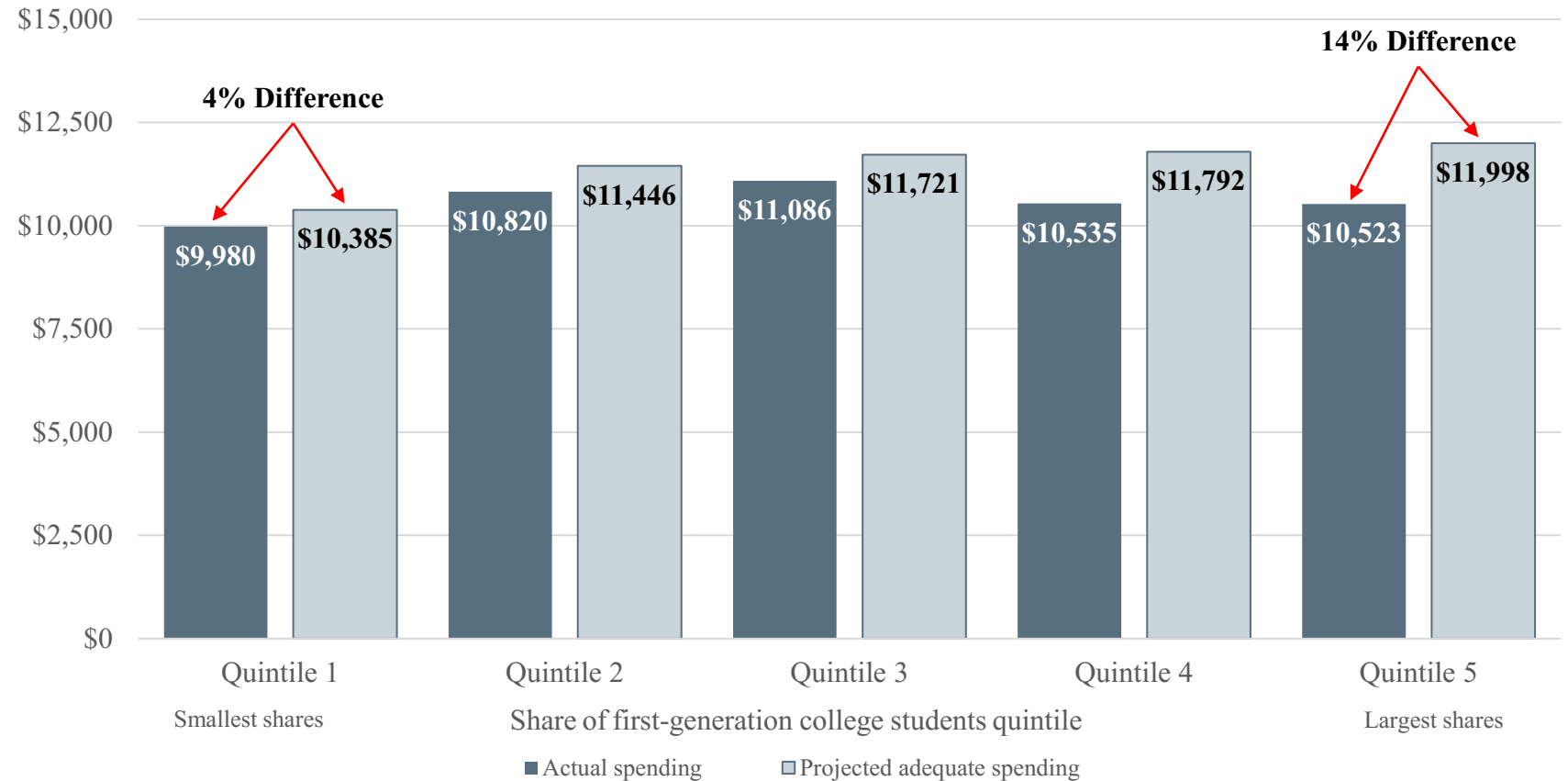
Implication of findings

- 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.

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Simulator tool: Funding projections made easy

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*.

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At American Institutes for Research

Simulator tool: Customizable weights

- Texas policymakers can use the Texas Community College Funding Simulator Tool (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
	Suggested Funding Weights	2.49	1.31	2.63	1.19	0.84	1.28	1.18	$4,537
A2. Select Funding Weight Type (Choose From Pull-Down Menu) -------->	Suggested Funding Weights								

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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

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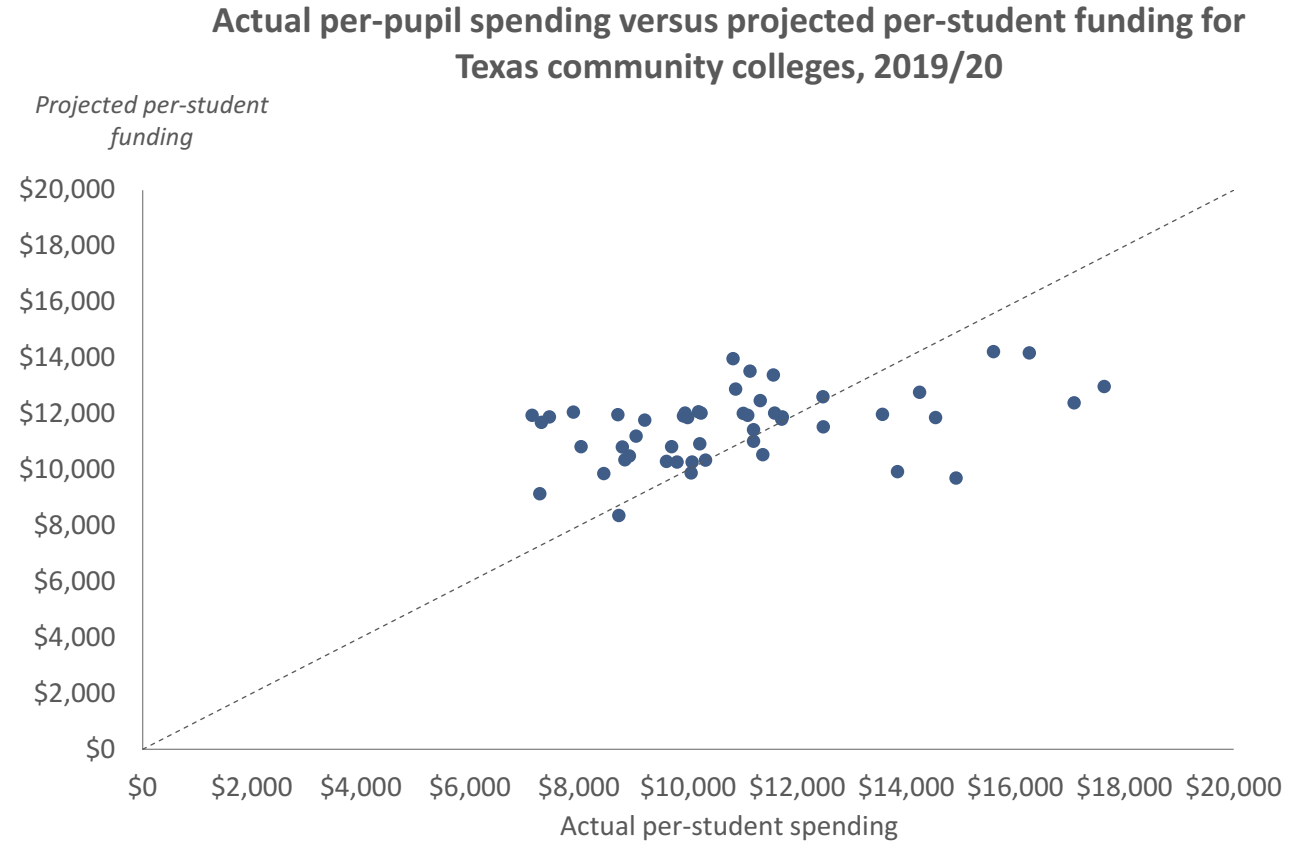
Simulator tool:
Dynamic figures of projected funding by student needs

- 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

Projected per-student funding

Percentage of first-generation college students

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