IES Institute of Education Sciences

An Examination of the Costs of Texas Community Colleges

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Policymakers in Texas want to understand the funding levels necessary for community colleges to meet their promise of providing an affordable and accessible pathway to a postsecondary certificate or degree. Regional Educational Laboratory Southwest conducted this study to help leaders at the Texas Higher Education Coordinating Board better understand the extent to which Texas community colleges have adequate funding for reaching the desired levels of student success, as measured by success points milestones used in the state's performance-based funding system. The study involved three types of analyses: a needs analysis, an equity analysis, and a cost function analysis. The needs analysis found that community colleges with higher percentages of first-generation college students, students who are economically disadvantaged, students who are academically disadvantaged, students older than 24 years, and English learner students earn fewer success points milestones per full-time equivalent student. The equity analysis found that community colleges with higher percentages of students who are academically disadvantaged spent less per full-time equivalent student, suggesting that there may be resource inequities for these students. The cost function analysis found that spending was not high enough to cover the cost of providing an equal opportunity for first-generation college students, students who are economically disadvantaged, students older than 24 years, and English learner students to achieve the same level of outcomes as students without these needs. The findings from this study can inform Texas policymakers' efforts to distribute funding for community colleges to support equitable opportunities for all students to succeed in college.

Why this study?

Community colleges have the potential to reduce economic inequality by providing affordable and accessible higher education options. Students who complete a two-year degree have higher rates of employment and lifetime earnings than students with only a high school diploma or a general equivalency diploma (Hilliard, 2011). In 2021, students who attained an associate's degree earned, on average, $8,500 more per year than high school graduates (Current Population Survey, 2022). Furthermore, because community colleges tend to be more affordable, students who attend community colleges accumulate less debt than students who attend four-year colleges or two-year for-profit colleges (Ma & Pender, 2021). Nearly 73 percent of students attending for-profit colleges borrow to attend compared with just 17 percent of students attending community college (Digest of Education Statistics, 2021).

However, many barriers can prevent community colleges from fulfilling the promise of a high-quality postsecondary education, particularly for students from disadvantaged backgrounds.

> For additional information, including background on the study, technical methods, and supporting analyses, access the report appendices at https://ies.ed.gov/ncee/rel/Products/Publication/100875

Although community colleges enroll the largest proportion of students who are economically disadvantaged and struggling academically, they receive significantly fewer federal and state resources than their four-year counterparts, and these resources have been declining in recent decades on a per-student basis (Hillman, 2020; State Higher Education Executive Officers Association, 2021). These resources contribute to the quality of education that students receive. A growing body of literature has suggested that students attending colleges with higher expenditures per student have both higher rates of college persistence and certificate or degree attainment and faster time to degree than colleges that spend less per student (Bound et al., 2019; Chakrabarti et al., 2020; Cummings et al., 2021).[1] Yet, the mission of community colleges to provide an affordable pathway to postsecondary education combined with declining support from local and state revenue sources make it increasingly difficult for community colleges to serve their constituents (Christensen & Turner, 2021).

Policymakers in Texas want to understand the funding levels necessary for community colleges to meet their promise. In 2021, the 87th Texas Legislature passed Texas Senate Bill 1230, which established the Commission on Community College Finance to study and recommend sufficient funding levels to provide a high-quality education that leads to successful outcomes for all students. Central to the Commission's work is a commitment to improving the equity of outcomes across students from diverse backgrounds and a particular focus on the outcomes of student groups that are traditionally underrepresented in higher education.

Texas's current community college funding model includes two primary components. The first, which allocates 82 percent of the state's funding resources, is based on the number of credit hours that students attempt in a year. Twelve percent is allocated through a performance-based system that awards more funding to colleges whose students complete important academic milestones, such as completing their first college-level mathematics course, completing 30 credit hours, and earning a certificate or degree. The remaining 6 percent comprises a core operations allocation and other nonformula items (Texas Association of Community Colleges, 2020a).[2]

However, research on performance-based funding models suggests that such funding arrangements may benefit colleges that serve a more advantaged student population who are already performing well. Colleges that serve a less advantaged student population often have fewer institutional resources to achieve the outcomes for which additional funding is awarded (Dougherty & Hong, 2006; Hagood, 2019). For community college funding systems to be equitable, they must account for the different levels of support needed to provide students from different backgrounds an equal opportunity to succeed.

In contrast to the body of research on the costs of K–12 education, research on the costs of community colleges is underdeveloped. In particular, there is comparatively little research on the costs associated

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[1] In a meta-analytic review of the student grant aid literature, researchers found that for every $1,000 increase in grant aid, degree completion increases approximately 2.5 percentage points (Nguyen et al., 2019). The literature on the effects of state appropriations is less developed, but recent evidence suggests that a $1,000 increase in appropriations per full-time equivalent student increases the likelihood of earning a bachelor's degree before the age of 25 by 1.5 percentage points (Chakrabarti et al., 2020).

[2] Further details on the Texas Student Success Points performance-based funding system are in appendix A.

with achieving desired outcomes, such as persistence and certificate or degree attainment, for community college students regardless of their backgrounds and educational needs. However, methodological guidance developed for estimating K-12 educational costs could be used to determine the level of funding that community colleges need to achieve the desired outcomes (Baker & Levin, 2017; Kahlenberg et al., 2018). Policymakers can use the findings from such an analysis to make decisions about the adequacy of their funding systems, and the extent to which colleges are equitably resourced to support students from all backgrounds in their postsecondary educational pursuits.

Regional Educational Laboratory Southwest conducted this study to help leaders at the Texas Higher Education Coordinating Board better understand the extent to which Texas community colleges receive adequate funding for reaching the desired levels of student outcomes. It represents one of the first attempts to apply methods from the K-12 school finance literature to estimate the costs of providing an equal opportunity to succeed for students who have different levels of need and attend colleges in different contexts. Because this study focuses on student outcomes that are part of the Texas Student Success Points system, state policymakers and leaders at the Texas Higher Education Coordinating Board can use the results to consider community college funding changes to ensure that students from all backgrounds are equitably and adequately funded in pursuing a community college education. Policymakers, education leaders, and researchers in other states can use the study as an example of how to estimate the cost of providing an adequate community college education in other contexts.

Research questions

This study examined five research questions that focus on the relationships among institutional spending, success points milestones, student need factors, and institutional contextual factors to estimate the costs of community college. Definitions of key terms used in the report are in box 1.

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 points 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 projected adequate cost and actual spending change with respect to incidence of specific student need factors and institutional contextual factors?

The data sources, sample, and methods used to answer the research questions, as well as the limitations of the study, are summarized in box 2 and detailed in appendix B.

Box 1. Key terms

Academically disadvantaged student. A student who, based on a Texas Success Initiative approved test, does not have college entry-level skills in reading, writing, or mathematics.

Adequacy gap. The difference between the amount of institutional spending per student required to achieve a desired level of student outcomes (the statewide average of earned success points milestones per student) and actual spending per student (adequate cost minus actual spending per student).

Adequate cost. The amount of spending per student required to achieve a desired level of student outcomes, given the student needs or institutional contextual factors that influence the spending level necessary.

Cost factors. Characteristics of institutions outside their control that influence the spending levels necessary to produce student outcomes, such as student need factors or institutional contextual factors.

Cost function analysis. The study of the relationship between spending and outcomes, given certain student need factors and institutional contextual factors.

Equity analysis. The study of the relationship between per-student spending and student need factors and institutional contextual factors to determine whether spending is positively associated with measures of student need, controlling for other factors affecting costs.

First-generation college student. A student from a family in which neither parent (nor guardian) has earned a bachelor's degree.

Institutional contextual factors. Characteristics of community colleges that influence the cost of producing student outcomes (that is, success points milestones), including enrollment size, local population density, local economic indicators such as median household income and median housing values, and average faculty salary in the local labor market.

Needs analysis. The study of the relationships between student need factors and student outcomes to identify need factors that hinder achieving desired outcomes.

Student need factors. Characteristics associated with student outcomes that often are thought of as indicators of need for higher or lower levels of support. The need factors in this study are the percentages of students at community colleges who are first-generation college students; economically disadvantaged, which is defined as coming from families earning less than $30,000 annually; academically disadvantaged; older than 24 years; classified as English learner students; and enrolled in high school dual-credit programs.

Success points milestones. Measurable student outcomes used to allocate funding to Texas community colleges, including passing a college-level course, earning 15 credit hours, earning 30 credit hours, attaining a credential, and transferring to a four-year institution.[1]

Vertical resource equity. The extent to which students with different levels of need receive different levels of resources. A positive association between per-student spending and a given student need factor is progressive. A negative association between per-student spending and the student need factor is regressive. No association between per-student spending and a given need factor is neutral.

Note

1. Although a variety of student outcomes are available in the data, the study focuses on this subset of outcomes (milestones) included in the Texas Student Success Points performance-based funding system. This study excludes three outcomes related to readiness for college-level work: success points for becoming college ready in mathematics, reading, or writing. Only those students placed into remedial coursework and then deemed ready based on their Texas Success Initiative status can earn points in these three categories. The remaining eight outcomes are more common progression metrics that are available to all community college students and, as such, are included.

Box 2. Data sources, sample, methods, and limitations

Data sources. The study team obtained publicly available data for 2014/15 to 2019/20 from the Texas Higher Education Coordinating Board, the School Finance Indicators Database, the College Scorecard, and the Integrated Postsecondary Education Data System. The study team obtained additional institutional-level data on specific student need factors from the Texas Higher Education Coordinating Board, via the University of Texas at Dallas Education Research Center. The study team then combined the elements into an institution-level dataset that includes information on institutional spending, student need factors (first-generation college student status, economic disadvantage, academic disadvantage, age, English learner student status, and participation in dual-credit programs), institutional contextual factors (enrollment size, local population density, and local economic indicators), and student outcomes (success points milestones). See table B1 in appendix B for additional information on data sources.

Sample. The study included the population of the 50 public community colleges in Texas, which serve almost 750,000 students (Texas Association of Community Colleges, 2020b).[1] The data used span from the 2014/15 (the year the Student Success Points performance-based funding system was implemented in Texas) to the 2019/20 school years (the most recent year for which data are available).

Outcome variables. The analysis focuses on two primary outcomes measured at the college level for each year in the study period: the number of success points milestones earned by the typical student in a given college and the amount of spending per student. The typical student in the study sample earned approximately 2.26 success points milestones, with values ranging from 1.61 to 2.86.

Methods. For all research questions, the study team used a series of regression analyses to explore relationships between student need factors and institutional contextual factors and the two outcomes of interest (success points milestones earned by the typical student in a given college and year and the total amount of spending per college). A detailed explanation of the methodological approach is in appendix B.

For research question 1, the study team conducted a needs analysis to identify student need factors that could help or hinder success in college. First, the study team explored pairwise correlations between hypothesized need factors and the number of success points milestones earned per full-time equivalent student. Second, because many of the student need factors may be related to one another, the study team conducted a conditional analysis. Using regression models that controlled for multiple student need factors as well as the enrollment size of the institution and population density of the county served by the institution, the study team then examined whether and to what extent each student need factor is related to success points milestones earned per full-time equivalent student.

To address research question 2, the study team conducted an equity analysis to determine whether institutional spending given student need factors and institutional contextual factors is equitable. The study team estimated relationships between spending per full-time equivalent student and several student need factors and institutional contextual factors to identify candidate factors to include in the cost function analysis used to address research question 3. The analysis draws on the K–12 concept of vertical resource equity by assessing the extent to which students with different levels of need receive different levels of resources (Berne & Stiefel, 1994). In turn, for a community college to exhibit vertical resource equity, institutions with students with higher needs should have higher per-student spending, controlling for institutional contextual factors. A positive association between per-student spending and a given student need factor is *progressive*. A negative association between per-student spending and the student need factor is *regressive*. It is possible that no association exists between per-student spending and the student need factor, which is *neutral*.

For research question 3, the study team performed a cost function analysis using an instrumental variables approach.[2] The student need factors and institutional contextual factors used in the cost function analysis were informed by the results from the needs analysis (research question 1) and the equity analysis (research question 2). The study team used predictions of community college per-student cost from the cost function analysis to estimate funding weights that could be used to inform the development of a new funding policy.

To identify the measures for which funding weights are to be estimated, the study team used the following four criteria:

- The measures must be consistently and regularly collected on at least a biennial basis to allow for alignment with the frequency with which community college funding is determined in Texas.

- The measures must be publicly available, such that the formula built upon them is transparent and replicable.

- The measures must be understandable to policymakers.

- The measures must predict the vast majority of the explained variation in the dependent variable used in the education cost function model (spending).

The results obtained from the cost function analysis project the levels of per-student spending (or costs) needed for students with certain need factors attending institutions with certain contextual factors to have an equal opportunity to achieve success points milestones. The study team then used these projected costs to calculate weights that can be incorporated into a funding formula. The weights are expressed as values that indicate the relative difference in spending necessary to provide an equal opportunity for students to earn the statewide average level of success points milestones. For example, a weight of 1.25 means that it costs 25 percent more to give students with a given need the same opportunity to earn success points milestones as an otherwise similar student without this need. Projecting costs at the average level of success points milestones per student may serve as a lower bound for what is deemed to be adequate. The team developed an accompanying weights simulation tool that Texas policymakers can use to adjust this outcome target, which will subsequently affect the projections of necessary spending.[3]

For research question 4, the study team used projected costs from the weights model and actual expenditure data for every community college to calculate the adequacy gap for each community college, which is the difference between what colleges would need to spend to produce an adequate level of student outcomes (set at the statewide average) and what they actually spent per full-time equivalent student. After calculating the expected adequacy gap for each college in 2019/20, each college was sorted by the size of the expected adequacy gap and categorized into five groups (quintiles) with roughly equal numbers of students served within each quintile. The average success points milestones earned per full-time equivalent student was then calculated for institutions within each quintile to determine whether differences emerged across quintiles.

Finally, for research question 5, the study team used the calculated adequacy gap for community colleges to examine if those that had larger shares of students with a given need factor (for example, share of first-generation college students) tended to spend more or less than was necessary to reach adequate levels of student outcomes. The study team used the same approach to determine whether gaps between projected adequate costs and actual spending were larger or smaller for institutions with different student enrollments.

Limitations. This study has three main limitations. First, the cost function approach estimates expected relationships among student need factors, institutional contextual factors, spending, and student outcomes. The estimated relationships provide no information about how dollars are spent or about best practices with respect to how resources should be allocated.

Second, the findings may not be generalizable to other state contexts. Although the sample for the study is the population of community colleges in Texas–providing representation of the varied groups of students served and the circumstances under which these institutions operate within this state–the results may be limited in their application to other states. Moreover, the study cannot determine whether Texas community colleges as a sector have adequate funding relative to other types of institutions (for example, four-year universities) in Texas or elsewhere.

Third, the findings should not be interpreted as causal. Although the study team took steps to reduce bias in the analytic approach, spending and student outcomes were determined simultaneously, and institutional spending decisions may not be perfectly efficient. See appendix B for additional details.

Notes

1. This count of community colleges includes a small number of multicampus systems or districts, but student success points are tabulated only at the district level for these systems.

2. Additional details about this approach are in appendix B.

3. The simulation tool is available upon request from contact.IES@ed.gov.

Key findings: Needs analysis

This section presents the main findings for the needs analysis, which addresses research question 1 by identifying student need factors that may influence earning success points milestones. More information on the study sample is in table B2 in appendix B.

Community colleges with higher percentages of first-generation college students, students who are economically disadvantaged, students who are academically disadvantaged, students older than 24 years, and English learner students tended to earn fewer success points milestones per full-time equivalent student

The student need factors most strongly associated with earning fewer success points milestones were the percentage of students who are first-generation college students and the percentage of students who are older than 24 years (table 1). These were followed by the percentage of students who are academically disadvantaged, the percentage of students from households earning less than $30,000, and the percentage of students who are English learner students. The only student need factor that was statistically significant and positively related to success points milestones was the percentage of students who are enrolled in dual-credit programs.

Table 1. Relationships between student need factors and success points milestones earned per full-time equivalent student in Texas community colleges, 2014/15–2019/20

Student need factor	Success points milestones earned per full-time equivalent student Correlation
Percentage of students who are first-generation college students	-.583***
Percentage of students who are from households earning less than $30,000	-.287***
Percentage of students who are academically disadvantaged	-.293***
Percentage of students who are older than 24 years	-.349***
Percentage of students who are English learner students	-.218***
Percentage of students who are enrolled in dual-credit programs	.138**

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

Note: The sample included 50 community colleges in 2014/15 through 2019/20, resulting in 300 college-year observations. Correlations are weighted by student enrollment.

Source: Authors' analysis of institution-level data collected by the Texas Higher Education Coordinating Board and the College Scorecard.

Community colleges with higher percentages of first-generation college students, students older than 24 years, English learner students, and students who are academically disadvantaged still earned fewer success points milestones per full-time equivalent student after accounting for other factors

After accounting for each student need factor and institutional contextual factor simultaneously using regression analysis, the results show that colleges with higher percentages of first-generation college students, students older than 24 years, English learner students, and students who are academically disadvantaged earned fewer success points milestones per full-time equivalent student (table 2). There was no longer a statistically significant relationship between the percentage of students who are economically disadvantaged and success points milestones earned per full-time equivalent student after accounting for other student need factors and institutional contextual factors, and there was no statistically significant relationship between the percentage of students enrolled in dual-credit programs and success points milestones earned per full-time equivalent student.

Table 2. Relationships between student need factors or institutional contextual factors and the number of success points milestones earned per full-time equivalent student in Texas community colleges, 2014/15–2019/20

Student need factor or institutional contextual factor	Success points milestones earned per full-time equivalent student	
	Coefficient	Robust standard error
Need factor		
Percentage of students who are first-generation college students	-2.016***	0.287
Percentage of students who are from households earning less than $30,000	0.084	0.174
Percentage of students who are academically disadvantaged	-0.188**	0.063
Percentage of students who are older than 24 years	-0.391*	0.193
Percentage of students who are English learner students	-0.345**	0.111
Percentage of students who are enrolled in dual-credit programs	0.142	0.243
Contextual factor		
Fewer than 4,001 students enrolled	-0.100	0.052
4,001–30,000 students enrolled	-0.080*	0.035
Local population density	-0.005	0.002
Constant	3.395***	0.150
Number of observations	300	
R^2	0.541	

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

Note: Data include 50 community colleges in 2014/15 through 2019/20, resulting in 300 college-year observations. The model is weighted by student enrollment and includes year fixed effects.

Source: Authors' analysis of institution-level data collected by the Texas Higher Education Coordinating Board, the College Scorecard, and the School Finance Indicators Database.

Key findings: Equity analysis

This section presents the main findings for the equity analysis, which answers research question 2 by examining whether institutional spending is equitable with respect to student need factors and institutional contextual factors.

Community colleges with higher percentages of students who are academically disadvantaged spent less per full-time equivalent student, suggesting the possibility of resource inequities for these students

With one exception, institutional spending was progressive with respect to several student need factors and institutional contextual factors associated with earning fewer success points milestones per full-time equivalent student (table 3). Community colleges with higher percentages of students older than 24 years, first-generation college students, English learner students, and students who are economically disadvantaged spent more per full-time equivalent student. The exception to this finding

was the percentage of students who are academically disadvantaged. Colleges with higher percentages of these students tended to spend less per full-time equivalent student, suggesting the possibility of resource inequities for students who are academically disadvantaged. For example, a 10 percentage point increase in the percentage of students enrolled who are academically disadvantaged was associated with a decrease in spending per full-time equivalent student of $428.

In addition, community colleges with lower enrollments typically spent more per full-time equivalent student than those with higher enrollments. This finding is consistent with expectations because of economies of scale; that is, smaller institutions often have to spend more per student to offer comparable services.

Table 3. Relationships between student need factors or institutional contextual factors and expenditures per full-time equivalent student in Texas community colleges, 2014/15–2019/20

Student need factor or institutional contextual factor	Success points milestones earned per full-time equivalent student	
	Coefficient	Robust standard error
Need factor		
Percentage of students who are first-generation college students	4,263.74*	1,952.78
Percentage of students who are from households earning less than $30,000	2,803.16**	886.92
Percentage of students who are academically disadvantaged	-4,284.23***	442.65
Percentage of students who are older than 24 years	14,461.58***	1,602.66
Percentage of students who are English learner students	3,761.93**	1,302.04
Percentage of students who are enrolled in dual-credit programs	-3,748.80*	1,582.84
Contextual factor		
Fewer than 4,001 students enrolled	1,629.69***	364.54
4,001–30,000 students enrolled	1,000.13***	259.84
Local population density	-17.49	18.37
Monthly faculty salary ($10,000s) in local market	1,463.15*	692.73
Constant	-675.09	1,361.67
Number of observations	300	
R^2	0.477	

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

Note: Data include 50 community colleges in 2014/15 through 2019/20, resulting in 300 college-year observations. The outcome is expenditure per full-time equivalent student. The model is weighted by student enrollment and includes year fixed effects.

Source: Authors' analysis of institution-level data collected by the Texas Higher Education Coordinating Board, the College Scorecard, the Integrated Postsecondary Education Data System, and the School Finance Indicators Database.

Key findings: Cost function analysis

This section presents the main findings for the cost function analysis, which answers research questions 3–5 by describing the relationship between institutional spending and student outcomes, accounting for student need factors and institutional contextual factors. Results of the regression analyses are in tables C1 and C2 in appendix C.

Community colleges with higher percentages of first-generation college students, students who are economically disadvantaged, students older than 24 years, and English learner students required additional funding to achieve adequate outcomes

Although spending was progressive (that is, a positive association between per-student spending and a given student need factor) for several student need factors, it is possible that it was not high enough to provide an equal opportunity for students with certain needs to achieve the same level of outcomes as students without those needs. The study team conducted a cost function analysis to determine the relative difference in spending necessary to provide an equal opportunity for students with a given need factor to earn the statewide average level of success points milestones as a student without that need factor.[3]

Colleges with higher percentages of first-generation college students and students older than 24 years required the largest increase in spending to achieve adequacy (table 4). It would cost 149 percent more (or a weight of 2.49) for a first-generation college student to have the same opportunity to earn the statewide average level of success points milestones as an otherwise similar student who is not a first-generation college student. Similarly, it would cost 163 percent more (or a weight of 2.63) for a student older than 24 to have the same opportunity to earn the statewide average level of success points milestones as an otherwise similar student who is younger than 24 years. Colleges with higher percentages of students who are economically disadvantaged also would need to spend more to achieve adequacy, as indicated by weights greater than 1 (see table 4). The only student need factor with a weight of less than 1 was the percentage of students in dual-credit programs.

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[3] The study team identified a set of student need factors and institutional contextual factors based on the four criteria described in box 2 and in consultation with the Texas Higher Education Coordinating Board.

Table 4. Weight estimation results examining the relationships between student need factors or institutional contextual factors and expenditure per full-time equivalent student in Texas community colleges, 2014/15–2019/20

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 years	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

Note: Data include 50 community colleges in 2014/15 through 2019/20, resulting in 300 college-year observations. The reference group for enrollment is colleges enrolling more than 30,000 students. Model is weighted by enrollment.

Source: Authors' analysis of institution-level data collected by the Texas Higher Education Coordinating Board, the College Scorecard, the Integrated Postsecondary Education Data System, and the School Finance Indicators Database.

For institutional contextual factors, colleges with the lowest enrollments had the highest weights, as expected. That is, smaller institutions often have to spend more per student to offer comparable services. It would cost 28 percent more for students at a small college (fewer than 4,001 students enrolled) to have the same opportunity to earn success points milestones as otherwise similar students at a large college (more than 30,000 students enrolled). Similarly, it would cost 18 percent more for students at midsize colleges (4,001 to 30,000 students enrolled) to have the same opportunity to earn success points milestones as otherwise similar students at a large college (see table 4).
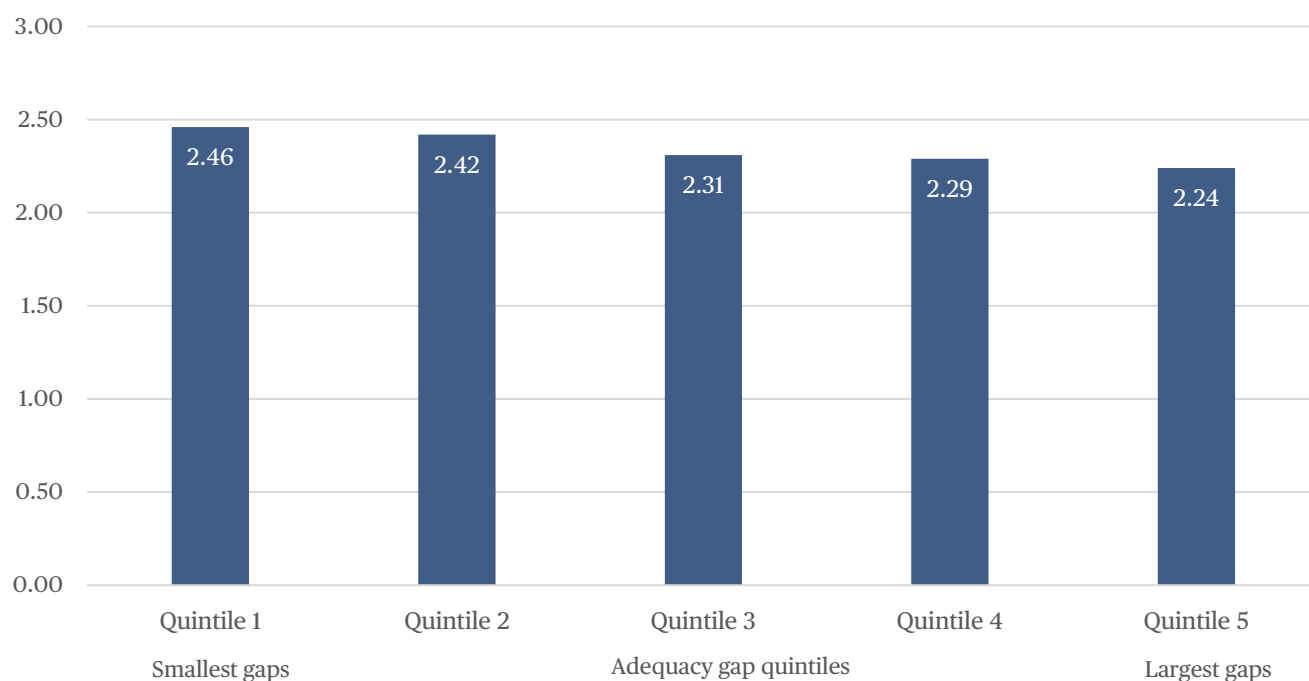
These weights can be applied to data collected annually by the Texas Higher Education Coordinating Board to determine adequate funding levels for each student at a given community college based on the characteristics of the students it serves and its institutional context. The base per-student cost of $4,537 is the adequate funding level for a student with no need factors who attends a large college. It would cost more than three times as much 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 a factor of 3.19, equal to the first-generation weight of 2.49 multiplied by the small college weight of 1.28). In dollar terms, the amount of necessary funding for this type of student equals $14,460 ($4,537 × 2.49 × 1.28).

Larger differences between projected adequate cost and actual spending were associated with less favorable student outcomes, as measured by the number of success points milestones per full-time equivalent student

Colleges with larger differences between projected adequate cost and actual spending (referred to as adequacy gaps) had fewer success points milestones per full-time equivalent student than colleges with smaller adequacy gaps (figure 1). The colleges with the largest adequacy gaps (quintile 5) earned an average of 2.24 success points milestones per full-time equivalent student compared with 2.46 for the colleges with the smallest adequacy gaps (quintile 1), a difference of 0.22 success points milestones.[4]

Figure 1. Larger differences between projected adequate cost and actual spending were associated with less favorable student outcomes in Texas community colleges, 2019/20

Success points milestone per FTE student

FTE is full-time equivalent student.

Note: Each quintile represents approximately 20 percent of the students in the state. Quintile 1 represents community colleges with the smallest adequacy gaps and quintile 5 the largest adequacy gaps. The top four quintiles include community colleges that spent less per full-time equivalent student than the projected cost of providing an adequate opportunity to achieve for all students, whereas the remaining quintile received more dollars than their projected adequate cost. All data represent student-weighted averages within quintiles in the last year of the data (2019/20). Success points milestones include passing a college-level course, earning 15 credit hours, earning 30 credit hours, attaining a credential, and transferring to a four-year institution.
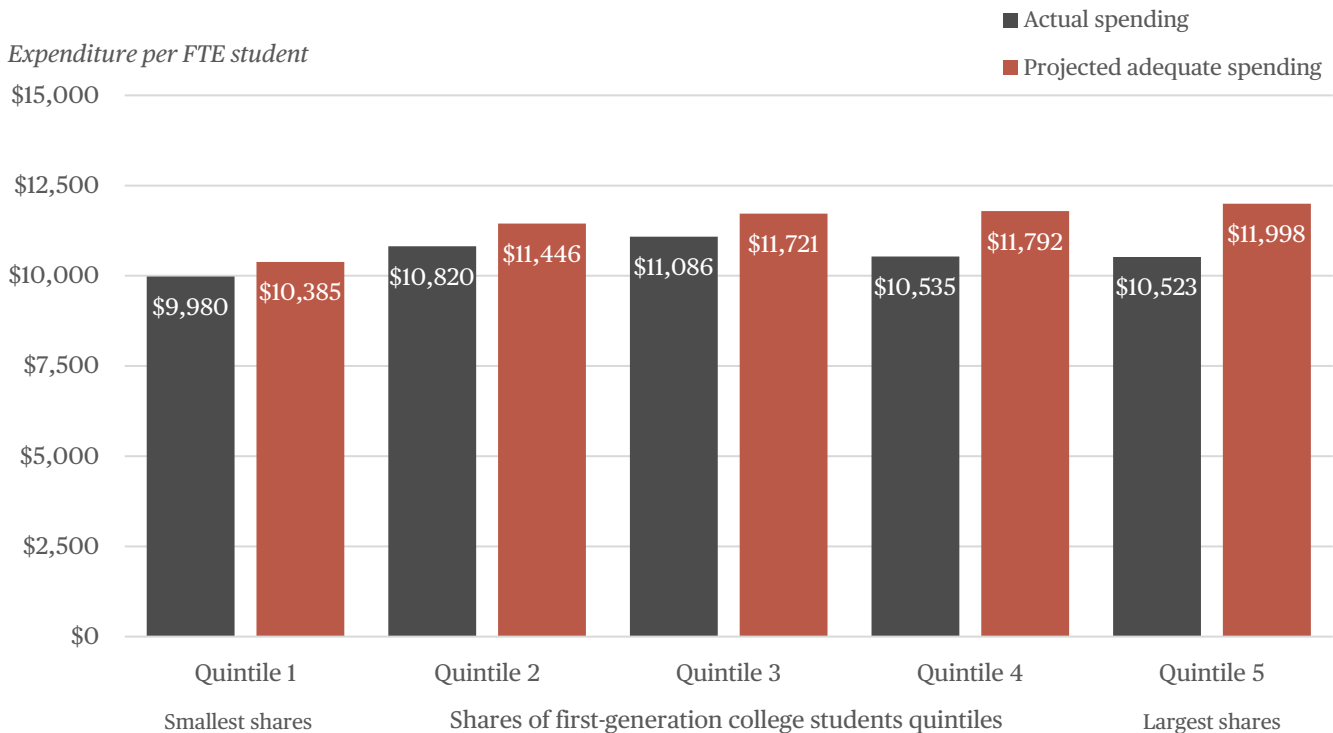
Source: Authors' analysis of institution-level data collected by the Texas Higher Education Coordinating Board, the College Scorecard, the Integrated Postsecondary Education Data System, and the School Finance Indicators Database.

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[4] This difference in success points milestones per full-time equivalent student is equal to approximately 1 standard deviation (0.224 success points milestones per full-time equivalent student) in the distribution of this measure for 2019/20.

Community colleges with higher shares of first-generation college students tended to have larger differences between projected adequate cost and actual spending

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 (figure 2). The colleges serving the highest shares of first-generation college students (quintile 5) spent $10,523 per full-time equivalent student, which was $1,475 less than the projected adequate cost of $11,998 or a 14 percent difference. In contrast, the colleges serving the lowest shares of first-generation college students (quintile 1) had an adequacy gap of only $405, a 4 percent difference between projected adequate cost and actual spending.

Figure 2. Texas community colleges with higher shares of first-generation college students tended to have actual funding levels that are less than what was needed to achieve adequate levels of student outcomes, 2019/20

FTE is full-time equivalent student.

Note: Each quintile represents approximately 20 percent of the students in the state. Quintile 1 represents community colleges with the smallest shares of first-generation college students and quintile 5 the largest shares. All data represent student-weighted averages within quintiles in the last year of the data (2019/20).
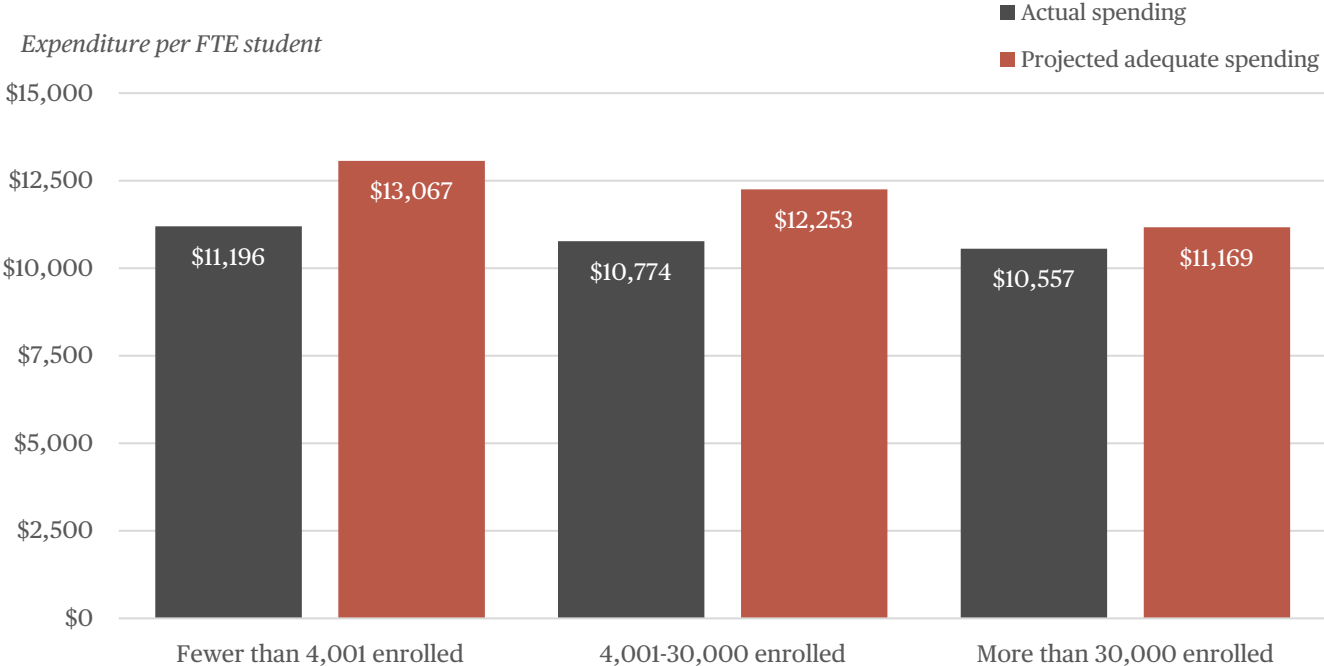
Source: Authors' analysis of institution-level data collected by the Texas Higher Education Coordinating Board, the College Scorecard, the Integrated Postsecondary Education Data System, and the School Finance Indicators Database.

Community colleges with lower enrollments tended to have larger differences between projected adequate cost and actual spending

Community colleges with fewer than 4,001 students tended to both spend more and exhibit a higher projected adequate cost per full-time equivalent student than community colleges with 4,001 or more

students and fewer than 30,000 students (figure 3). Colleges with fewer than 4,001 students spent $11,196 per full-time equivalent student, whereas the funding level necessary to achieve adequate outcomes was $13,067 (a difference of $1,871 or 17 percent). In contrast, colleges with 4,001 or more students and fewer than 30,000 students spent $10,774 per full-time equivalent student, which was $1,479 less (or 14 percent) than the $12,253 projected adequate cost. Finally, colleges with more than 30,000 students spent $10,557 per full-time equivalent student, which was $612 (or 6 percent) less than the $11,169 projected adequate cost. This larger average adequacy gap for colleges with fewer than 4,001 students suggests that smaller community colleges within Texas need additional funding to support adequate outcomes.

Figure 3. Texas community colleges with lower enrollments tended to have larger differences between actual spending and projected adequate cost than community colleges with higher enrollments, 2019/20

FTE is full-time equivalent student.

Note: All data represent student-weighted averages within enrollment categories in the last year of the data (2019/20).

Source: Authors' analysis of institution-level data collected by the Texas Higher Education Coordinating Board, the College Scorecard, the Integrated Postsecondary Education Data System, and the School Finance Indicators Database.

Implications

The findings from this study can inform Texas policymakers' efforts to distribute funding for community colleges to support equitable opportunities for all students to succeed in college. Texas policymakers may consider providing additional funding for institutions that serve students with higher needs and those that are smaller. 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 students older than 24 years, first-generation college students, English learner students, and economically disadvantaged students. However, the additional amount of spending for students with these characteristics may not be enough to provide an equal opportunity for them to meet success points milestones. The study found that institutions serving the highest shares of first-generation college students, students who are economically disadvantaged, students older than 24 years, and English learner students may not have the funding necessary to support an equal opportunity for success. For example, the models in this study predict that colleges with the highest shares of first-generation college students would need to spend over $1,400 per student more than they currently spend to provide their students an equal opportunity to achieve the statewide average of success point milestones per student.

To determine how much additional funding to allocate to community colleges, Texas policymakers can use a simulation tool that the study team developed. The simulation tool allows policymakers to analyze different funding scenarios based on assumptions about student need factors, institutional contexts, and desired outcomes to generate cost projections. Regional Educational Laboratory Southwest supported the Texas Higher Education Coordinating Board to use the simulation tool in 2022, which could inform decisions about funding made by the Texas legislature.

As this research moves forward, it will benefit from the availability of future data. Including additional years of data to the models will not only serve to improve the relevance of the findings to the current policy considerations but also enhance precision of the model estimates. Given that the Texas legislature meets biennially, one to two years of data could be added to the model before the legislative session starting in 2025. During this interim, the Texas Higher Education Coordinating Board will be able to consider additional student needs and institutional cost factors that may be useful to include in the cost function model. Importantly, policymakers would benefit from future research that includes a more nuanced investigation of how community colleges choose to spend their funds, as this study focused only on the relationship between overall spending, student need factors, and institutional contextual factors to arrive at funding adequacy targets.

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