Exploring the Costs of California Community Colleges and Implications for Funding Equity: Summary Brief

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In the 2022–23 school year, community colleges in the U.S. provided an accessible and affordable path to higher education for nearly 10.2 million students, including many from traditionally underserved backgrounds (American Association of Community Colleges, 2024). Community colleges provide substantial benefits to their students and society. On average, individuals who complete a 2-year degree have higher employment rates and earn about $8,800 more per year than those with only a high school diploma (U.S. Bureau of Labor Statistics, 2024). Furthermore, public investments in community colleges have been estimated to yield benefits that exceed cost by a factor of 3.5 (Levin & Garcia, 2018).

However, community colleges often do not receive sufficient funding to produce desired student outcomes, such as progress towards and completion of degrees or certificates (Baum et al., 2013; Kahlenberg et al., 2018; Baker & Levin, 2017. Community colleges often must make do with fewer federal and state resources per full-time equivalent (FTE) enrollment than their 4-year counterparts (Hillman, 2020; State Higher Education Executive Officers Association, 2023).

Community college funding is also often not equitable, meaning colleges that serve a greater share of high-need students often do not receive the additional financial resources necessary to provide their student body with the same opportunity for success as colleges that serve lower need populations (Hillman, 2020; Kolbe & Baker, 2019; You et al., 2022). A growing body of research suggests that funding inequities can exacerbate educational attainment gaps, as students attending colleges with higher expenditures per student have higher rates of persistence and certificate or degree attainment, as well as faster time to degree (Bound et al., 2019; Chakrabarti et al., 2018; Cummings et al., 2021).

To properly fund community colleges, policymakers need information about the true costs of producing desired student outcomes and how these costs may vary for students with different backgrounds and in different locations. This information is especially important for states that use performance-based funding systems, which may provide higher levels of funding to colleges serving more advantaged student populations for whom it is less costly to achieve the incentivized outcomes. In contrast, colleges serving less advantaged populations often have fewer institutional resources to achieve the outcomes for which additional funding is awarded (Dougherty & Hong, 2006; Hagood, 2019). For community colleges to be funded fairly, the funding distribution mechanism must account for the varying levels of support needed to provide students from different backgrounds and in different learning contexts an equal opportunity to succeed.

To date, research on community college funding has seldom applied rigorous methods for determining the costs of producing desired student outcomes. To fill this gap in the literature, the American Institute for Research® (AIR®) used an ***education cost function*** to estimate the cost of providing all community colleges with the resources necessary to give all students an equal opportunity for postsecondary success (Baker & Levin, 2017). This approach, which has been used for more than two decades in the K-12 funding adequacy literature, involves the statistical modeling of real-world data on educational spending, student characteristics, and academic outcomes to determine the cost of achieving common student outcomes and identify how that cost varies according to student and school characteristics (Duncombe, 2002).

Data – Our analysis used publicly available data from CalPassPlus, the School Finance Indicators Database, and the federal Integrated Postsecondary Education Data System (IPEDS) for the 2014–15 to 2020–21 school years (see Appendix A for full data details). The key variable categories include the following:

- **Student needs and characteristics** (e.g., percentages of enrollment by gender, race/ethnicity, age [25 or older], Pell recipient, first-generation college attendee, as well as veteran, English learner and foster youth status
- **Institutional, geographical, and economic context** (e.g., enrollment size, Carnegie classification of institutions of higher education, student completions in health or science/technology, county measures of fiscal capacity [assessed property value per capita and median household income], average community college faculty salaries)
- **Student outcomes** (e.g., IPEDS 200% graduation rate, California Vision Goal completion rate (3-year), and Student Centered Funding Formula Student Success Allocations [earned by achieving various student outcomes] translated into points)[1]

To demonstrate the power of our approach, we conducted a case study on the California Community Colleges (CCC) system, which serves approximately 2.1 million students across 116 colleges and is the largest system in the United States (CCC, n.d.). Specifically, we used the education cost-function methodology to investigate four research questions related to community college learning opportunity, funding, and cost in California:

RQ 1. Which student needs are significantly associated with student persistence and completion outcomes produced by California community colleges?

RQ 2. Does institutional spending per student vary with respect to student needs and measures of local wealth across California community colleges?

RQ 3. To what extent are local wealth measures related to the distribution of local and state funding per student across California community college districts?

[1] Student Success Allocations represent funding for the number of students earning associate's degrees for transfer ($1,760), the number of students earning associate's degrees not for transfer ($1,320), the number of students earning bachelor's degrees ($1,320), the number of students earning credit certificates ($880), the number of students who complete 4-year college/university transfer-level math and English within their first year ($880), the number of students transferring to 4-year colleges and universities ($660), the number of students who complete nine or more career education units ($440), and the number of students who have attained the regional living wage ($440) [figures in parentheses represent student success allocations in 2018-19]. For the purpose of this study, these allocations are translated to points ($440 represents 1 point).

RQ 4. What spending levels are associated with producing outcomes for students with different needs attending California community colleges in different contexts?

In the remainder of this summary brief, we provide an overview of the analyses and findings related to each research question, before concluding with a discussion of the policy and research implications of this innovative approach to estimating the true cost of equal learning opportunities in community colleges. A more detailed treatment of both the methodology and findings can be found in the main report (Levin et al., 2025).

RQ 1: Which student needs are significantly associated with student persistence and completion outcomes produced by California community colleges?

We examined the degree to which student need factors (e.g., race/ethnicity, age, financial need) are related to student success in California's community colleges. Regression analysis was used to describe the relationship between student outcomes and student need factors, as well as institutional contextual factors using data at both the community college (institution) and community college district levels.[2,3] This analysis allows us to identify which student populations in the California community college system may need additional support to have an equal opportunity to achieve desired outcomes. Specifically, measures of student need that prove to be most strongly related to student outcomes should be considered for inclusion in the cost function analysis we later use to determine the differential costs of generating outcomes for students from different backgrounds.

Exhibit 1 summarizes findings from both institution-level and district-level regression models, indicating clear (statistically significant) relationships between nine student need factors and the three outcomes of interest. For example, community colleges with higher percentages of students who are 25 and older or those who are Pell grant recipients tend to have lower IPEDS 200% graduation rates and 3-Year California Vision Goal completion rates. IPEDS 200% graduation rates also tend to be lower for institutions and districts serving a greater share of female students. Interestingly, while we see that there is a significant and negative relationship between the percentage of students designated as English learners and both the 3-Year California Vision Goal completion rate and success points per FTE, the institution-level model suggests there is a significant and positive relationship between IPEDS 200% graduation rates and English learners percentage.

[2] The institutional contextual factors in this analysis include the percentage of undergraduates who are full-time, and the share of completions awarded in health and science or technology.
[3] There are several community college districts that are made up of multiple community colleges, which allows us to run separate models using data at both the individual community college and community college district levels.

Exhibit 1. Relationships Between Student Outcomes and Need Factors

Student need factor	IPEDS 200% graduation rate	3-Year California Vision Goal completion rate	Success Points per FTE student
Percentage of students who are female	↓	–	–
Percentage of students who are Black	–	–	↓[a]
Percentage of students who are Hispanic	–	–	–
Percentage of students who are 25 years old or older	↓	↓	–
Percentage of students who received a Pell grant	↓	↓	–
Percentage of students who are first-generation college students	–	–	–
Percentage of students who are U.S. military veterans	–	–	–
Percentage of students who are designated as English learners	↑[a]	↓	↓
Percentage of students who are designated as foster youth	–	–	–

Note. ↓ denotes statistically significant *negative* relationship between student outcome and need factor; – denotes statistically insignificant relationship between student outcome and need factor. All estimated regression models were weighted by 12-month FTE student enrollment so that community colleges with higher enrollments contributed more heavily to the reported results.

[a] Estimated relationship between student need factor and outcome was only statistically significant at the 5%-error level in the institution-level model.

RQ2: Does institutional spending per student vary with respect to student needs and measures of local wealth across California community colleges?

In an equitable funding system, per-student spending should increase with student needs and other factors influencing the cost of producing outcomes, but should not be sensitive to the wealth of the local community. To understand the equity of the California community college funding system we conducted analyses focused on the degree to which per student spending in California community colleges varies at the institution-level according to student needs and local wealth disparities, respectively, in addition to a variety of institutional and geographic contextual factors.[4]

Exhibit 2 shows statistically significant relationships between per-student spending and three student need factors (denoted by arrows in the cells). Specifically, community colleges with higher percentages of female students and foster youth are expected to spend more on instruction (progressive spending patterns). Similarly, those with higher percentages of female students spend more per student overall.

[4] In this analysis, institutional contextual factors refer to the percentage of undergraduates who are full-time, the share of community college completions awarded in health and science or technology, and college Carnegie classification, while geographic contextual factors include the degree of competition posed by institutions competing in the same geographic area, using the Core-Based Statistical Area (CBSA) defined by the U.S. Office of Management and Budget, and the average faculty salary across surrounding colleges in the same CBSA.

In contrast, community colleges with greater proportions of Pell Grant recipients tend to spend less on instruction (a regressive spending pattern).

Exhibit 2. Relationships Between Spending Per Student and Student Needs

Student need factor	Instructional spending per 12-month headcount	Overall spending per 12-month headcount
Percentage of students who are female	↑	↑
Percentage of students who are Black	–	–
Percentage of students who are Hispanic	–	–
Percentage of students who are 25 years old or older	–	–
Percentage of students who received a Pell grant	↓	–
Percentage of students who are first-generation college students	–	–
Percentage of students who are U.S. military veterans	–	–
Percentage of students who are English learner students	–	–
Percentage of students who are foster youth	↑	–

Note. ↑ denotes statistically significant *positive* relationship between spending and student factor; ↓ denotes statistically significant *negative* relationship between spending and student need factor; – denotes statistically insignificant relationship between spending and student need factor. All estimated regression models were weighted by 12-month FTE student enrollment.

Exhibit 3 shows that community colleges in areas with higher property values tend to spend more per student both on instruction and overall, when controlling for median household income and institutional/geographic contextual characteristics (a regressive relationship between spending and local economic conditions). However, holding county assessed value per capita and institutional and geographic contextual characteristics constant, we see that those with greater median household income tend to spend less per student both on instruction and overall (a progressive relationship).

Exhibit 3. Relationships Between Spending Per Student and Local Property Wealth/Household Income

Fiscal capacity factor	Instructional spending per 12-month headcount	Overall spending per 12-month headcount
County assessed value per capita	↑	↑
County median household income	↓	↓

Note. ↑ denotes statistically significant *positive* relationship between spending and wealth/income factor; ↓ denotes statistically significant *negative* relationship between spending and wealth/income factor; – denotes statistically insignificant relationship between spending and wealth/income factor. All estimated regression models were weighted by 12-month FTE student enrollment.

RQ3: To what extent are local wealth measures related to the distribution of local and state funding per student across California community college districts?

To understand whether community colleges located in areas that have higher fiscal capacity receive more local or state funding per student than those located in areas with lower fiscal capacity, we conducted a revenue equity analysis. The revenue equity analysis estimates the relationship between the amount of funding per student received by the community college district through local or state sources and indicators of local fiscal capacity (county-level measures of assessed property value per capita and median household income), holding constant institutional and geographic contexts.[5]

This analysis highlights the extent to which community colleges are systematically advantaged or disadvantaged, in terms of their funding allocations, based on the wealth and income of the communities they serve. From an equity standpoint, of particular interest is understanding whether there is a significant positive relationship between local funding and property wealth (assessed property value) per capita or median household income, and if this might be offset by a significant negative relationship between state funding and property wealth or income.

The first row of Exhibit 4 shows that there is no statistically significant relationship between county assessed property value per capita and either the local appropriations or state appropriations per student provided to a community college district. In contrast, the results in the second row of the exhibit show that districts in counties with greater median household income tend to have higher local appropriations per student, while also tending to have lower state appropriations per student. This suggests that while local income may enable higher local appropriations per pupil (a regressive funding pattern), state appropriations are progressive with respect to household income.

[5] In this analysis institutional contextual factors refer the percentage of undergraduates who are full-time, the share of completions awarded in health and science or technology, and the Carnegie classification. Geographic contextual factors include the Herfindahl-Hirschman index and the average faculty salary across surrounding colleges in the same CBSA.

Exhibit 4. Relationships Between Local/State Appropriations Per Student and Local Property Wealth/Household Income

Fiscal capacity factor	Local appropriation per 12-month headcount	State appropriation per 12-month headcount
County assessed value per capita	–	–
County median household income	↑	↓

Note. ↑ denotes statistically significant *positive* relationship between appropriation and wealth/income factor; ↓ denotes statistically significant *negative* relationship between appropriation and wealth/income factor; – denotes statistically insignificant relationship between appropriation and wealth/income factor. All estimated regression models were weighted by 12-month FTE student enrollment.

RQ 4: What spending levels are associated with producing outcomes for students with different needs attending California community colleges in different contexts?

The cost function analysis aims to quantify the spending levels required to mitigate the association between student need factors and student outcomes, while accounting for institutional contextual factors that also potentially influence costs. To estimate costs, we regressed per-student spending on student outcomes, student needs, institutional and geographic contexts, and measures of spending efficiency. Two separate models were run with differing measures of student outcomes (IPEDS 200% graduation rate and 3-Year California Vision Goal completion rate).

The cost function analysis builds upon the student needs analysis by translating identified student needs into concrete funding requirements. In addition, it extends the spending equity analysis by estimating optimal funding levels that enable all colleges an equal opportunity to produce the same level of outcome regardless of the needs of the students they serve or other contextual characteristics that influence cost. In turn, this analysis offers policymakers a nuanced understanding of the financial implications of generating equitable outcomes for the diverse student populations and institutional contexts across California community colleges.

Exhibit 5 shows that there is a consistent, statistically significant, and positive relationship between student outcomes and spending per FTE across all four estimated models (for both the IPEDS 200% graduation rate and 3-Year California Vision Goal completion rate modeled using institution- and district-level data, respectively). The district- and institution-level IPEDS 200% graduation rate outcome models estimate that it would require $495 to $524 per FTE, respectively, to raise the completion rate by 1 percentage point. To extrapolate the latter estimate to a more sizable improvement, increasing the IPEDS 200% graduation rate from the 2020–21 statewide institution-level average of 45% to 55% would cost about $5,243 more per FTE. This spending level necessary to improve the IPEDS 200%

graduation rate by 10% would therefore equal $22,766 per FTE student, representing a 30% increase above the calculated average actual spending per FTE for 2020–21 ($17,523).[6]

It would cost even more to increase all colleges' performance on the 3-Year California Vision Goal completion rate metric, which is a more stringent measure of student success. Improving this metric by 1 percentage point would require an additional $648 to $653 per FTE per the institution- and district-level model estimates.[7] Improving the rate from the 2020–21 statewide institution average of about 13% to 20% would cost $4,533 more per FTE, equal to a 26% increase above actual spending for that year. Both models demonstrate that improving student outcomes, regardless of the metric used, would require significant additional investment. However, they also suggest that targeted increases in funding could yield substantial improvements in student success rates.

Exhibit 5. Relationships Between Student Outcomes/Needs and Spending Per Student from Cost Function Models

	Total expenditures per full-time equivalent student			
	IPEDS 200% graduation rate cost model		3-Year California Vision Goal completion rate cost model	
Student outcome or need factor	Institution level	District level	Institution level	District level
Outcome				
IPEDS 200% graduation rate	↑	↑	N/A	N/A
3-Year California Vision Goal completion rate	N/A	N/A	↑	↑
Student need factor				
Percentage of students who are female	↑	↑	–	–
Percentage of students who received a Pell grant	↑	↑	–	–
Percentage of students who are 25 years old or older	↑	↑	↑	↑
Percentage of students who are foster youth	↑	↑	↑	↑

Note. ↑ denotes statistically significant *positive* relationship between outcome or student need and spending; – denotes statistically insignificant relationship between student outcome and need factor. All estimated regression models were weighted by 12-month FTE student enrollment.

[6] The range in cost is derived from the regression estimates generated by the institution and community college district models in Table C–8 in Appendix C of the main report (Levin et al., 2025).
[7] The range in cost is derived from the regression estimates generated by the institution and community college district models listed in Table C–10 in Appendix C of the main report (Levin et al., 2025).

The cost analysis also explores the cost implications of serving students with various needs, building directly on the insights from the student needs analysis. The most pronounced relationship is observed for students from a foster care background. Our models suggest that a one percentage point increase in the share of students from a foster care background raises the cost of providing an equal opportunity by $737 in the IPEDS 200% graduation rate model and $557 in the 3-Year California Vision Goal completion rate model. Given that the average share of foster care students in 2020–21 across institutions was about 2%, with higher-need institutions serving around 4%, the practical cost differences between average and high-need institutions to provide an equal opportunity that accounts for foster care students in terms of the IPEDS 200% graduation rate and 3-Year California Vision Goal completion rate are $1,049 and $1,295 per FTE student (6% to 7% above average actual 2020–21 spending), respectively.

Across all models, we also observe that greater enrollment shares of students who are older than 25 are associated with increased costs for maintaining IPEDS 200% graduation rates and 3-Year California Vision Goal completion rates.[8] Finally, the results from both the institution- and district-level models suggest that the proportions of students who qualify for Pell Grants or are female also significantly impact the costs of attaining a higher IPEDS 200% graduation rate.[9]

Additional Institutional Contextual Factors

The findings of the cost analysis revealed two institutional contextual factors that had a positive influence on costs. The percentage of completions awarded in health-related fields of study proved to be statistically significant in the estimated models for both outcomes, while the average faculty salaries in other colleges that offer associate degrees within the same core-based statistical area (CBSA) defined by the U.S. Office of Management and Budget proved to be significant in the cost model using the 3-Year California Vision Goal completion rate as an outcome.

These findings have important practical implications. First, institutions with a higher percentage of completers in health-related fields of study may require additional funding to maintain their programs and achieve similar completion rates to institutions with fewer health-related programs. This could be due to the higher costs associated with health-related programs, such as specialized equipment and facilities. For instance, our models suggest that for every 1 percentage point increase in completers with a health-related fields of study, an institution would require an additional $162 to $177 per FTE student to maintain the same IPEDS 200% graduation rate.

[8] The range of costs per FTE student associated with a percentage point of students served who are 25 years or older is from $328 to $351 for the model of IPEDS 200% graduation rates and from $196 to $200 for the model of 3-Year California Vision Goal completion rates.

[9] Specifically, to provide an equal opportunity for students who are Pell Grant recipients to meet the IPEDS 200% graduation outcome institutions and community college districts would require an additional $186 to $195 per FTE student for each percentage point of Pell Grant recipients. The additional cost of achieving the IPEDS 200% graduation outcome per percentage point of female students ranges from $192 to $204.

Second, the significance of average faculty salary across other institutions in the same CBSA suggests that community colleges in areas with higher overall faculty compensation levels may need additional funding to compete for instructor talent and meet other potentially elevated costs in order to produce the same student completion rates as their peer colleges in lower-cost labor markets. Specifically, for every $1,000 increase in the average faculty salary at nearby institutions, a community college would need an additional $477 to $484 per FTE student to achieve the same 3-Year California Vision Goal completion rate. This highlights the importance of considering regional labor market conditions when determining funding allocations for community colleges.

Policy and Research Implications

Our study demonstrates the potential of applying school finance methods that have been used in the K-12 sector for over two decades to investigate community college costs. We bring to bear the application of cost-function techniques to estimate the cost of producing community college student outcomes, including the IPEDS 200% graduation rate and 3-year California Vision Goal completion rate. Applying this generalizable approach addresses a long-standing need in higher education finance for robust techniques to determine the levels of community college funding necessary to produce outcomes associated with persistence and completion and to ensure that all students are provided with an equal opportunity to achieve these outcomes.

More specifically, we were able to provide a preliminary demonstration of how publicly available data on California's community colleges can be used to generate cost-based estimates for producing community college outcomes that vary according to student needs and other institutional, geographic, and economic contextual factors. The insights generated by this effort may prove useful for developing an equitable cost-based mechanism with which to distribute funding to California community colleges. For example, we demonstrated that a cost function model can be used to estimate a specific dollar-value cost for improving California community college outcomes to specific target levels. Likewise, we were able to estimate the incremental cost for colleges serving greater shares of students with various needs (e.g., students who are Pell grant recipients, older than 25, foster youth), providing programs that require specialized equipment and facilities such as health care, or that operate in competitive faculty labor markets.

Our reliance solely on publicly accessible data leads us to urge caution that the specific findings should not be interpreted as precise or authoritative at this time. While the estimated relationships between college spending and outcomes, student characteristics, and contextual factors align well with our expectations, addressing data missingness and gaining access to additional data regarding student needs or other factors could provide additional determinants of cost and improve the precision of our estimates.

Nonetheless, our demonstration of the cost function method has important implications for the community college funding system in California. Specifically, the findings raise several questions that the state should consider and research further:

- Is current funding meeting the needs of the system as a whole?
- What factors should be used to adjust community college funding to meet these costs?
- To what extent do the student characteristics accounted for in California's Student Centered Funding Formula (AB540, California College Promise Grant, and Pell Grant Recipients) align with the factors identified by our analyses as driving the differential costs of providing an equal educational opportunity to students with different needs?
- Does the Student Centered Funding Formula provide the funding necessary for all community colleges to have an equal opportunity to meet the performance-based funding incentives?

Developing and implementing a community college funding system that (1) is sufficiently funded to meet desired student outcome goals and (2) distributes funding appropriately to address the differential costs associated with student needs and other contextual factors offers a transformative potential for improving the efficacy and equity of community college education in California. The current study demonstrates the feasibility of a rigorous and innovative methodology that can be used to lead this crucial work and answer the questions raised by our findings.

We believe that the promise shown by the application of cost functions to better understand the true cost of community college in California indicates a need for future research that leverages more nuanced and complete records on student needs and other institutional factors. The estimates produced by such a study could produce groundbreaking results and provide the best available evidence on the cost of improving student outcomes statewide and ensuring that all colleges have the resources necessary to provide an equal educational opportunity to their students.

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Appendix A. Summary of Data and Key Variables

This study uses publicly available data from CalPassPlus, the School Finance Indicators Database (SFID), and the federal Integrated Postsecondary Education Data System (IPEDS) for the 2014–15 to 2020–21 school years. [10] The key variables include:

- Student demographic characteristics: percentages of enrollment by gender, race/ethnicity, age (25 or older), first-generation status, financial need (receiving a Pell Grant), English learner status, foster youth status, and veteran status.
- Institutional, geographical, and economic context: enrollment size, percentage of undergraduate students who are full-time, and the share of completions awarded in health and science or technology, spending per FTE, degree of competition among colleges located within the core-based statistical area (Herfindahl-Hirschman Index), county-level measures of fiscal capacity for raising local funding for community colleges (assessed property value per capita and median household income), and average faculty salary level in surrounding colleges within the core-based statistical area.
- Student outcomes: IPEDS 4-year (200% time) graduation rate, 3-year California Vision Goal completion rate (share of students earning a certificate or degree within 3 years), and student success allocations per FTE (earned by various positive student outcomes, such as transfers to 4-year institutions and course completions).

[10] Data sources can be found online at: https://www.calpassplus.org/Home (CalPassPlus), https://www.schoolfinancedata.org/ (SFID), and https://nces.ed.gov/ipeds/use-the-data/ (IPEDS).