MODELING STATE INVESTMENT IN AMERICA'S COLLEGE PROMISE:

Technical Documentation

INSTITUTION ELIGIBILITY

We derived our base dataset of degree-granting public Title IV-participating institutions from the Integrated Postsecondary Education Data System (IPEDS) 2019 data collection. From there, we narrowed institutions using a variety of collected and calculated variables. We selected these variables based on the definitions and our assumptions of the intentions in the House Education and Labor Committee's proposal for free community college.

- We assumed the term "predominant" to mean the most common degree. To obtain a list of institutions that predominantly awarded associate degrees, we compared the total number of associate degrees against the total number of bachelor's degrees, total number of master's degrees, and total number of doctoral degrees (inclusive of all three IPEDS categories) awarded in 2019 (see "Eligibility" in *Table 1*).
- Institutions that awarded more associate degrees than the other three degree categories were considered "eligible."
- Alaska and the District of Columbia did not have an eligible community college. Following the House bill eligibility criteria, we manually added eligible public four-year institutions, in each state, that have an existing community or technical college as part of their institution.

FULL-TIME EQUIVALENT (FTE) ENROLLMENT

The FTE enrollment used in our model was calculated using various IPEDS variables that allowed us to exclude baccalaureate students and out-of-state students from the estimated undergraduate FTE enrollment at each institution (see "Full-Time Equivalent (FTE) Enrollment" in *Table 1*). We took the following steps to calculate this variable:

- First, because IPEDS does not include the proportion of students enrolled at each degree level, we calculated the percentage of associate degrees and certificates awarded at each institution in 2019 using the following formula:
    - Percent in eligible degrees = (associates + certificates) / (associates + certificates + bachelors).
- Second, we multiplied these percentages by the estimated 2018-2019 undergraduate FTE for each institution to estimate an FTE that excluded baccalaureate-level students.
    - Undergraduate FTE in eligible degrees = (percent in eligible degrees * undergraduate FTE)

- Third, we multiplied the new FTE estimate by the percentage of students paying in-district and in-state tuition.
    - Eligible students = (undergraduate FTE in eligible degrees * (percent in-district + percent in-state))
- Finally, we aggregated these FTE estimates to the state level.

We assumed flat community college enrollment between 2018-2019 and 2022-2023. Following this, we assumed a 5% annual increase in enrollment for the first three years of the program and a 2% increase in years four and five (see *Table 2*).

IN-STATE UNDERGRADUATE HEADCOUNT (UNDUPLICATED)

In-state undergraduate headcount was only used to determine the number of students served by the program. We modified the undergraduate headcount to exclude baccalaureate-level and out-of-state students, like our adjustments to undergraduate FTE enrollment. See "In-State Undergraduate Headcount (Unduplicated)" in *Table 1* for the complete list of IPEDS variables used to create these estimates.

UNWEIGHTED U.S. MEDIAN TUITION

To determine the median in-state tuition, we calculated state-level averages of the published in-state tuition and fees for eligible institutions across all U.S. states, territories, and outlying areas (see IPEDS variables "U.S. Median Tuition" in *Table 1*). We assumed that the term "resident" in the House bill referred to in-state rather than in-district tuition and fees. We then found the median of these averages, which is the average of the two states closest to the middle. These data were not weighted by enrollment to be consistent with the House bill language.

WEIGHTED TUITION AND FEE ESTIMATES

To calculate weighted tuition and fees (necessary to understand a state's actual costs to eliminate tuition and fees) for this first-dollar program, we used published tuition and fees, excluding bachelor's students and out-of-state students, and adjusted for the proportion of students paying in-district versus in-state tuition rates at each institution. See "Weighted Tuition and Fee Estimates" in *Table 1* for the complete list of IPEDS variables used to estimate enrollment weighted tuition and fees. We estimated the total amount of tuition and fee revenue to be covered by the federal and state match using the following steps:

- First, we calculated in-district and in-state undergraduate FTE enrollment estimates, which excluded bachelor's students (described above).
- Second, we multiplied these two FTE figures by their respective published 2019-2020 in-district and in-state tuition and fee rates for each eligible institution:

  - Two-year tuition and fees = (in-district associate and certificate FTE * in-district published tuition and fees) + (in-state associate and certificate FTE * in-state published tuition and fees)
- For the seven eligible institutions at which neither in-district nor in-state published tuition and fees were reported, we used an alternative calculation based on the IPEDS Finance Survey tuition and fee revenue plus applied discounts and allowances.
- All institution level weighted tuition and fee estimates were summed up to the state level to be used in the model.

STATE FUNDING

To calculate the required increase needed in state funding for eligible institutions, we used SHEEO data from the State Higher Education Finance (SHEF) report. We chose to use SHEF rather than IPEDS data for state funding so we could more accurately capture state tax appropriations and sources of non-tax state support, isolate state general operating appropriations from financial aid, and determine existing levels of state support in states with unusual funding structures that aren't well represented in the IPEDS finance data (such as in Colorado).

- Because SHEF data are collected at the sector (rather than institutional) level, and the SHEF definition of a two-year institution does not precisely match the House definition used in our modeling, we calculated the percentage of SHEF two-year FTE enrollment included in IPEDS FTE enrollment for our eligible institutions and modified the SHEF two-year total state support by that proportion:
  - State support = (SHEF two-year general operating + SHEF two-year state financial aid) / (IPEDS FTE enrollment / SHEF two-year FTE enrollment).
- We also included SHEF state financial aid in our calculations of the percentage increase needed in total state support. Because financial aid can only be applied to the state match after tuition and fees are $0, financial aid was excluded from the state match in all states until they met $0 tuition rates.
- We assumed that states would hold total revenues at eligible institutions constant and increase their state funding to offset the elimination of tuition revenues. According to the House bill, states can only use local funding or state financial aid toward the calculation of their state match if they can show they have not reduced total revenue, including tuition revenue.

INFLATION

We assumed 3% annual inflation and adjusted all financial input data (such as state funding and tuition revenue) for annual inflation for all years leading up to and during the program (see *Table 2*). The House bill permits the U.S. median tuition calculation, which the federal and state match are based upon, to grow by the lesser of CPI or 3%.

FEDERAL MATCH

The federal tuition match was calculated for a given award year by multiplying the percentage match dictated in *Table 2* by the calculated U.S. median tuition ($4,586), adjusted for inflation, and by each state's estimated FTE enrollment for that award year:

- Federal tuition match = (federal match percent * U.S. median tuition * state FTE enrollment)

This resulted in a total dollar amount that the federal match would contribute to covering the cost of all tuition and fees in each state. The inflation-adjusted per-FTE federal match is listed in *Table 2*.

STATE MATCH

Our models assume that all states fully participate in the program. Assumptions about which states participate and how much enrollment growth there is can significantly sway total cost estimates.

The state tuition match was calculated for a given award year by multiplying the percentage match dictated in *Table 2* by the calculated U.S. median tuition ($4,586), adjusted for inflation, and by each state's estimated FTE enrollment for that award year:

- State tuition match = (state match percent * U.S. median tuition * state FTE enrollment)

We then determined whether any of the state's match could be covered by existing state financial aid. Existing non-merit financial aid can be used toward the state's match once the state has met the $0 tuition and fee requirement and if the state maintains total institutional revenues. For modeling purposes, we assumed that all community college financial aid was eligible (i.e., not primarily merit-based). We applied existing two-year state financial aid to each state's tuition match until either the entire state tuition match amount was covered or the state had no more financial aid to be used.

Importantly, according to the bill, states must meet the required match in a given award year even if the federal subsidy is enough to cover $0 tuition in the state.

ADDITIONAL STATE INVESTMENT

For states with above-median tuition revenue, we assumed states would increase state funding beyond their match percentage to offset the elimination of tuition in order to maintain institutional revenues. While this is not required in the current legislation, states cannot use local funding as part of their match unless they maintain total revenue at eligible institutions. We calculated the additional total cost of eliminating tuition at these institutions:

- Total state cost to eliminate tuition = tuition and fee revenue – federal tuition match

Finally, we assumed that states would increase their existing state funding to fund enrollment increases at the same per-FTE level (as required in the maintenance of effort) and would increase funding to adjust for inflation. We calculated the increase in state support outside of covering tuition using the following formula:

- Total new state support needed = ((state support / old FTE enrollment) * inflation) * new FTE enrollment
- Total new state support needed was added to the state tuition match net of applicable financial aid (for states with below-median tuition) or added to the total state cost to eliminate tuition (for states with above-median tuition).

LOCAL SUPPORT

In our primary models, we assumed no additional commitment from local governments. This means that local funding was assumed to increase with inflation and enrollment, but not to increase toward the state match or additional state investment.

We created a second model to examine how local governments could increase funding and reduce the additional state investment necessary in certain states. In this model, we assumed that state and local funding would increase proportional to the existing ratio of state to local appropriations for community colleges. For example, if 30% of state and local funding came from local appropriations in 2020, we assumed that local governments would contribute 30% of the additional cost to meet the state match and make tuition and fees $0.

As with state funding, we also assumed local appropriations would increase to account for inflation and enrollment growth.

In states with below-median tuition, state financial aid was only applied to the state portion of the match. In a few states (those with low tuition, substantial financial aid, and some local appropriations), this meant that less existing funding was going toward the match, as existing financial aid was in some cases replaced with new local appropriations. In both models, the sum of state funding + local funding + state financial aid is equivalent.

Table 1. Formulas and Variables Used in Modeling

Calculated Variable	**Data Elements Used (All data elements, except those noted as SHEF, are from IPEDS)**
Community College Eligibility	DRVC2019_RV.Associate's degree DRVC2019_RV.Bachelor's degree DRVC2019_RV.Master's degree DRVC2019_RV.Doctor's degree - research/scholarship DRVC2019_RV.Doctor's degree - professional practice DRVC2019_RV.Doctor's degree - other
Full-Time Equivalent (FTE) Enrollment	EFIA2019_RV.Estimated full-time equivalent (FTE) undergraduate enrollment, 2018-19 DRVC2019_RV.Associate's degree

	DRVC2019_RV.Certificates of less than 1-year DRVC2019_RV.Certificates of 1 but less than 2-years DRVC2019_RV.Certificates of 2 but less than 4-years SFA1819.Percentage of students in fall cohort who are paying in-district tuition rates SFA1819.Percentage of students in fall cohort who are paying in-state tuition rates
In-State Undergraduate Headcount (Unduplicated)	EFFY2019_RV.Grand total - EFFY2019.Level of student (Undergraduate) DRVC2019_RV.Bachelor's degree SFA1819.Percentage of students in fall cohort who are paying in-district tuition rates SFA1819.Percentage of students in fall cohort who are paying in-state tuition rates
U.S. Median Tuition	IC2019_AY.Published in-state tuition and fees 2019-20
Weighted Tuition and Fee Estimates	IC2019_AY.Published in-district tuition and fees 2019-20 IC2019_AY.Published in-state tuition and fees 2019-20 F1819_F1A.Tuition and fees, after deducting discounts and allowances) F1819_F1A.Discounts and allowances applied to tuition and fees EFIA2019_RV.Estimated full-time equivalent (FTE) undergraduate enrollment, 2018-19 DRVC2019_RV.Associate's degree DRVC2019_RV.Certificates of less than 1-year DRVC2019_RV.Certificates of 1 but less than 2-years DRVC2019_RV.Certificates of 2 but less than 4-years SFA1819.Percentage of students in fall cohort who are paying in-district tuition rates SFA1819.Percentage of students in fall cohort who are paying in-state tuition rates
State Funding	State Higher Education Finance (SHEF) two-year general public operating State Higher Education Finance (SHEF) two-year state financial aid State Higher Education Finance (SHEF) two-year net FTE enrollment State Higher Education Finance (SHEF) two-year local appropriations

Table 2. Assumptions of Federal Grant Amounts and State Match Used in Modeling

Assumptions	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28
Federal Match (%)				100%	95%	90%	85%	80%
Federal Match ($)	$5,162	$5,051	$4,929	$4,795	$4,648	$5,162	$5,051	$4,929
State Match (%)				0%	5%	10%	15%	20%
State Match ($)				$0	$266	$548	$846	$1,162
Inflation		3%	3%	3%	3%	3%	3%	3%
Enrollment Growth		0%	0%	5%	5%	5%	2%	2%

Note: The effective award year of the legislation is 2023-24. In this table, the federal match ($) in AY 2020-21 through 2022-23 is the estimated median tuition calculated as described above. To accommodate Congressional budget rules, the bill sunsets the program in 2027-28.