

# How the College Cost Reduction Act Could Threaten the Teacher Pipeline

Technical Documentation



## Appendix I

The tables below list the average liability for the top 25 largest bachelor's degree and master's degree programs by cohort size.

Among the highest enrollment bachelor's degree programs, liability ranges from five percent (Computer Science) to 55 percent (Fine and Studio Arts). Eighteen of these 25 programs have an average liability of 20 percent or higher. Given the size of these programs, these payments could be substantial. This list also includes some programs typically targeted as poor return on investment; Psychology and English Language and Literature have an average liability of 46 percent, while History and Sociology programs have an average liability of 37 percent. However, programs typically touted for better labor market outcomes still face liability. Business Administration, Marketing, and Economics all have an average liability of over 20 percent.

### Average Liability Among Bachelor's Degree Programs with Highest Enrollment

Program	Average Liability	Total Pooled BA Cohort (2014-15 and 2015-16)
Computer Science	5%	67,613
Computer and Information Sciences, General	7%	75,751
Mechanical Engineering	10%	75,293
Registered Nursing, Nursing Administration, Nursing Research and Clinical Nursing	12%	303,818
Finance and Financial Management Services	12%	94,719
Mathematics	15%	43,931
Accounting and Related Services	18%	106,419
Economics	21%	80,314
Marketing	22%	89,199
Business/Commerce, General	24%	50,634
Business Administration, Management and Operations	26%	341,943
Multi/Interdisciplinary Studies, Other	31%	52,429
Political Science and Government	32%	85,156
Social Work	33%	44,537
Criminal Justice and Corrections	33%	107,247
Liberal Arts and Sciences, General Studies and Humanities	34%	89,688
Biology, General	35%	168,681

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Program	Average Liability	Total Pooled BA Cohort (2014-15 and 2015-16)
Sociology	37%	59,446
Health and Physical Education/Fitness	37%	96,867
History	37%	52,037
Communication and Media Studies	39%	109,963
Teacher Education and Professional Development, Specific Levels and Methods	40%	101,827
English Language and Literature, General	46%	67,318
Psychology, General	46%	218,656
Fine and Studio Arts	55%	51,541

Liability for the highest enrollment master's degree programs ranges from one percent (Registered Nursing) to 80 percent (Mental and Social Health Services). Counseling and mental health services feature prominently on this list and have some of the highest average liabilities. Similarly, teaching and education master's programs have high average liability. Overall, the largest master's degree programs tend to have higher liability than the largest bachelor's degree programs.

### Average Liability Among Master's Degree Programs with Highest Enrollment

Program	Average Liability	Total Pooled MS Cohort (2014-15 and 2015-16)
Registered Nursing, Nursing Administration, Nursing Research and Clinical Nursing	1%	101,645
Electrical, Electronics and Communications Engineering	4%	20,289
Computer Science	8%	24,270
Computer/Information Technology Administration and Management	8%	18,517
Computer and Information Sciences, General	11%	32,948
Business/Commerce, General	11%	18,253
Allied Health Diagnostic, Intervention, and Treatment Professions	11%	22,417
Management Sciences and Quantitative Methods	15%	35,679
Business Administration, Management and Operations	18%	249,069
Accounting and Related Services	21%	39,798
Health and Medical Administrative Services	30%	27,072
Educational Administration and Supervision	34%	55,961
Rehabilitation and Therapeutic Professions	37%	18,123
Public Administration	44%	25,145

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Program	Average Liability	Total Pooled MS Cohort (2014-15 and 2015-16)
Public Health	47%	31,135
Special Education and Teaching	50%	37,562
Curriculum and Instruction	50%	31,380
Education, General	52%	38,785
Teacher Education and Professional Development, Specific Subject Areas	54%	34,235
Social Work	64%	63,656
Teacher Education and Professional Development, Specific Levels and Methods	64%	52,013
Student Counseling and Personnel Services	66%	25,011
Theological and Ministerial Studies	68%	20,893
Clinical, Counseling and Applied Psychology	68%	41,406
Mental and Social Health Services and Allied Professions	80%	26,533

### Appendix II: Methodology

This analysis uses publicly available data from the College Scorecard and the Integrated Postsecondary Education Data System (IPEDS). Many data points needed to calculate program-level liability under the proposed formula do not currently exist in publicly available data sources. The above analysis attempts to estimate these data points as closely as possible. Methodologies differ for the analyses of bachelor's degree program and master's degrees.

#### *Bachelor's Degree Programs*

Using College Scorecard, we first merged the most recent Field of Study data to the most recent Institution-Level data, both last accessed in April 2024. Using variable CREDLEV to isolate bachelor's degree programs, 68,987 bachelor's degree programs at 2,475 institutions in the Field of Study data were matched on UNITID to Institution-Level data. 2,513 programs at 142 institutions did not match any UNITID in the Institution-Level data. After removing U.S. Service Schools and institutions in U.S. territories using variable REGION, our sample is 67,799 programs at 2,395 institutions.

We use variable EARN\_MDN\_4YR from the College Scorecard to calculate the value-added earnings component of the quotient formula. Earnings data for 44,260 of these programs is privacy-suppressed, leaving 23,539 programs at 2,286 institutions. The cohort for EARN\_MDN\_4YR is a pooled earnings cohort of students who completed a degree in 2014-15 or 2015-16. Earnings were measured in 2019 and 2020 and are adjusted to 2021 dollars. To calculate the value-add earnings, we subtracted 150 percent of the federal poverty level from EARN\_MDN\_4YR, using the 2021 Health and Human Services Poverty Guidelines. From these

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guidelines, we calculated 150 percent of the federal poverty level to be \$19,320 for the 48 contiguous states, \$22,230 for Hawaii, and \$24,135 for Alaska.

To estimate the total price charged, we use multiple IPEDS datasets. First, we use the Student Financial Aid (SFA) and Net Price surveys for 2014-15 and 2015-16 (SFA1415 and SFA1516), to match the cohort of students used in the earnings measurement in the College Scorecard. This survey disaggregates grant aid by source only for first-time full-time students. Because we want to capture a more complete set of students, we use the first-time full-time variables to create a ratio of federal grant aid to all grant aid by dividing variable FGRNT\_T by variable AGRNT\_T. We then subtract this number from 1 to estimate the proportion of all grant aid that is not federal and apply this ratio to the total amount of grant aid awarded to all undergraduates using variable UAGRNTT. This gives us the total amount of non-federal grant aid awarded to all undergraduate students for 2014-15 and 2015-16.

To estimate the costs from which we will subtract that aid, we also use the SFA files to identify the proportion of students paying in-district, in-state, and out-of-state tuition and fee rates. Again, these figures are available only for first-time full-time students, so we calculate ratios using variables SCFA11P, SCFA12P, SCFA13P, AND SCFA14P, and we estimate the number of all undergraduate students paying each rate using variable SCUGRAD for total undergraduate enrollment.

Next, we use the IPEDS Institutional Characteristics survey on student charges for academic year programs for 2014-15 and 2015-16 (IC2015\_AY and IC2016\_AY). We calculate total charges for in-district tuition and fees using variables TUITION1 and FEE1, in-state using TUITION2 and FEE2, and out-of-state using TUITION3 and FEE3. We assume full-time tuition and fee rates for this analysis, though we acknowledge that many students do enroll part-time in bachelor's degree programs and their tuition and fee rates would be lower. Unfortunately, while IPEDS provides the number of students enrolled part-time vs. full-time, it does not disaggregate these numbers by residency status, which affects tuition rates at most public institutions.

We merge the tuition and fee rates from IC2015\_AY and IC2016\_AY with the total grant aid and undergraduate enrollment by residency calculated from SFA1415 and SFA1516. Using our calculated enrollment by residency, we multiply the number of students in each residency category by their respective tuition and fee rates. For students with unknown residency, we use in-state tuition and fee rates. For institutions where residency status data is unavailable, we use the average of in-state and out-of-state tuition and fees. The sum of these calculations represents our estimate of the total tuition and fee revenue for each institution. We then subtract the estimated total amount of non-federal grant aid from the estimate total tuition and fees revenue to get total net tuition and fees. This number is divided by the number of undergraduates, then multiplied by four years to estimate the per-student tuition and fees charged after applying non-federal grant aid. We average these figures for 2014-15 and 2015-16 to get our total price charged, which we can estimate for 4,260 institutions.

After merging this data with the College Scorecard data, we match the estimated total price charged data to value-added earnings data and calculate a quotient and liability for 23,280 programs at 1,770 institutions. This is our final sample for the bachelor's degree analysis.

We calculate the earnings-to-price quotient by dividing value-added earnings by estimated total price charged. We subtract this quotient from 1 to calculate the estimated liability of each program. For the highest and lowest liability analyses, we exclude CIP codes that have only three or fewer programs in our sample, which eliminates 63 CIP codes.

### *Master's Degree Programs*

Using College Scorecard, we first merged the most recent Field of Study data to the most recent Institution-Level data, both last accessed in April 2024. Using variable CREDLEV to isolate master's degree programs, 34,428 master's degree programs at 2,011 institutions in the Field of Study data were matched on UNITID to Institution-Level data. 757 programs at 82 institutions did not match any UNITID in the Institution-Level data. After removing U.S. Service Schools and institutions in U.S. territories using variable REGION, our sample is 33,851 programs at 1,956 institutions.

We use variable EARN\_MDN\_HI\_2YR from the College Scorecard to calculate the value-added earnings component of the quotient formula. Earnings data for 21,584 of these programs is privacy-suppressed, leaving 12,267 programs at 1,628 institutions. The cohort for EARN\_MDN\_HI\_2YR is a pooled earnings cohort of students who completed a degree in 2014-15 or 2015-16. Earnings were measured in 2017 and 2018 and are adjusted to 2019 dollars. To calculate the value-add earnings, we subtracted 300 percent of the federal poverty level from EARN\_MDN\_HI\_2YR, using the 2019 Health and Human Services Poverty Guidelines. From these guidelines, we calculated 300 percent of the federal poverty level to be \$37,470 for the 48 contiguous states, \$43,140 for Hawaii, and \$46,800 for Alaska.

To estimate the total price charged, we use the IPEDS Institutional Characteristics survey on student charges for academic year programs for 2014-15 and 2015-16 (IC2015\_AY and IC2016\_AY). Because IPEDS does not provide graduate student enrollment data disaggregated by residency status, we use in-state tuition and fee rates, which we average over the two years of data. We multiply this average by two years to get the total price charged, which we can estimate for 2,087 institutions. We are not able to estimate institution-granted tuition discounts or grants for graduate students due to lack of data.

After merging this data with the College Scorecard data, we match the estimated total price charged data to value-added earnings data and calculate a quotient and liability for 9,761 programs at 1,360 institutions. This is our final sample for the master's degree analysis.