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A NATIONAL ANALYSIS OF VARIATIONS IN STATE FINANCIAL AID PROGRAM DESIGN AND STUDENT SUCCESS

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Financial aid in higher education is designed to improve college access and degree completion outcomes for students from all economic backgrounds, and research shows positive effects of aid on student outcomes.¹ The majority of research on the role and influence of financial grant aid typically focuses on federal aid, such as Pell grants, rather than state-level aid, but individual states allocate over \$12 billion in student financial aid each year.²

State policymakers typically determine how much of a state's financial aid allocations will be distributed based on students' financial need, academic merit, or a combination of need and merit.³ States can assess financial need by examining a given student's family income or expected family contribution (EFC). States typically measure merit by a student's high school GPA, college entrance exam score (e.g., SAT or ACT), or performance on a statewide assessment. Despite substantial increases in the total amount of student financial aid allocated at the state level over the past two

Among institutions located in states with combo-based aid, requiring a college entrance exam for eligibility was associated with smaller enrollments and lower graduation rates compared to institutions that did not require the exams.

¹ Nguyen, T. D., Kramer, J. W., & Evans, B. J. (2019). The effects of grant aid on student persistence and degree attainment: A systematic review and meta-analysis of the causal evidence. *Review of Educational Research*, 89(6), 831-874.

² Authors' calculations using data from the National Center for Education Statistics' Integrated Postsecondary Education Data System.

³ Dynarski, S., Page, L. C., & Scott-Clayton, J. (2022). *College costs, financial aid, and student decisions* (No. w30275). National Bureau of Economic Research.

decades, the proportion of financial aid based on need has decreased 14.3 percent during that same time period.⁴

Previous research has shown that state-level increases in merit-based financial aid are associated with decreases in state-level allocations of need-based financial aid, indicating a trade-off between state-level investments in merit- and need-based aid rather than increases in the total amount of student financial aid.⁵ Financial aid can improve college access and student success outcomes for all types of students, but need-based aid, in particular, improves enrollment and persistence among students from lower-income backgrounds.⁶ Despite the positive impact of federal Pell grants, need- or merit-based scholarships, and other forms of financial aid on educational attainment⁷, little is known regarding the extent to which variations in how states allocate financial aid relate to students' likelihood of enrollment and degree completion. Prior research has primarily focused on the effect of individual students receiving financial aid⁸ or the effects of individual aid programs or types of programs on student outcomes.⁹ Our current research complements these findings by examining how state-level policies relate to students' enrollment and completion, allowing for a holistic assessment of the student financial aid structures within states.

In this brief, we leverage the first-ever comprehensive dataset outlining state-by-state financial aid program characteristics to address the following research questions:

- 1. To what extent do variations in how states allocate financial aid between financial need and academic merit relate to student enrollment and degree completion?**
- 2. To what extent does the design of state financial aid policies (e.g., definitions of need and merit) relate to student enrollment and degree completion?**

⁴ Baker, D., Rosinger, K., Ortagus, J., & Kelchen, R. (2020) *Trends in state funding for state financial aid*. InformEd States. Retrieved from https://informedstates.org/s/IS_Brief_TrendsInStateFunding_StudentFinancialAid.pdf.

⁵ McLendon, M. K., Tandberg, D. A., & Hillman, N. W. (2014). Financing college opportunity: Factors influencing state spending on student financial aid and campus appropriations, 1990 through 2010. *The ANNALS of the American Academy of Political and Social Science*, 655(1), 143-162.

⁶ Kim, J. (2012). Exploring the relationship between state financial aid policy and postsecondary enrollment choices: A focus on income and race differences. *Research in Higher Education*, 53(2), 123-151.

⁷ Dynarski, S., Page, L. C., & Scott-Clayton, J. (2022). *College costs, financial aid, and student decisions* (No. w30275). National Bureau of Economic Research.

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⁸ Dynarski, S., Page, L. C., & Scott-Clayton, J. (2022). *College costs, financial aid, and student decisions* (No. w30275). National Bureau of Economic Research.

⁹ Gurantz, O. (2020). What does free community college buy? Early impacts from the Oregon Promise. *Journal of Policy Analysis and Management*, 39(1), 11-35.; Zhang, L., & Ness, E. C. (2010). Does state merit-based aid stem brain drain?. *Educational Evaluation and Policy Analysis*, 32(2), 143-165.

We collected detailed data on states' financial aid programs available for first-time entering college students for fiscal years (FYs) 2004-2020. We examined the language of the policies (from legislative text and state higher education websites and reports), creating a list of programs that included eligibility criteria that were based on one of three areas: financial need (need-based), academic qualifications (merit-based), or both financial need and academic qualifications criteria (combo-based).¹⁰ We created this dataset by examining more than 4,000 state financial aid documents, including state budgets and higher education agency and aid commission websites and reports. When historical information was not available on current websites, we used the Internet Archive: Wayback Machine to locate older documents. We also used the Thomson Reuters Westlaw Database to locate historical state administrative code that outlined program requirements. When we were unable to locate information or found inconsistent information, we reached out to state higher education officials to request clarification.

For each of those three categories (need, merit, and combo aid), we collected the following for each FY: amount of aid awarded and disbursed, number of students who received aid, and eligibility requirements for the most inclusive program in the state (in that FY). We adjusted all dollar amounts for inflation, so that the amount of aid is in 2020 dollars. From these data, we created aid-per-recipient measures (e.g., need-based aid amount in 2020 dollars divided by need-based number of recipients for a given FY).

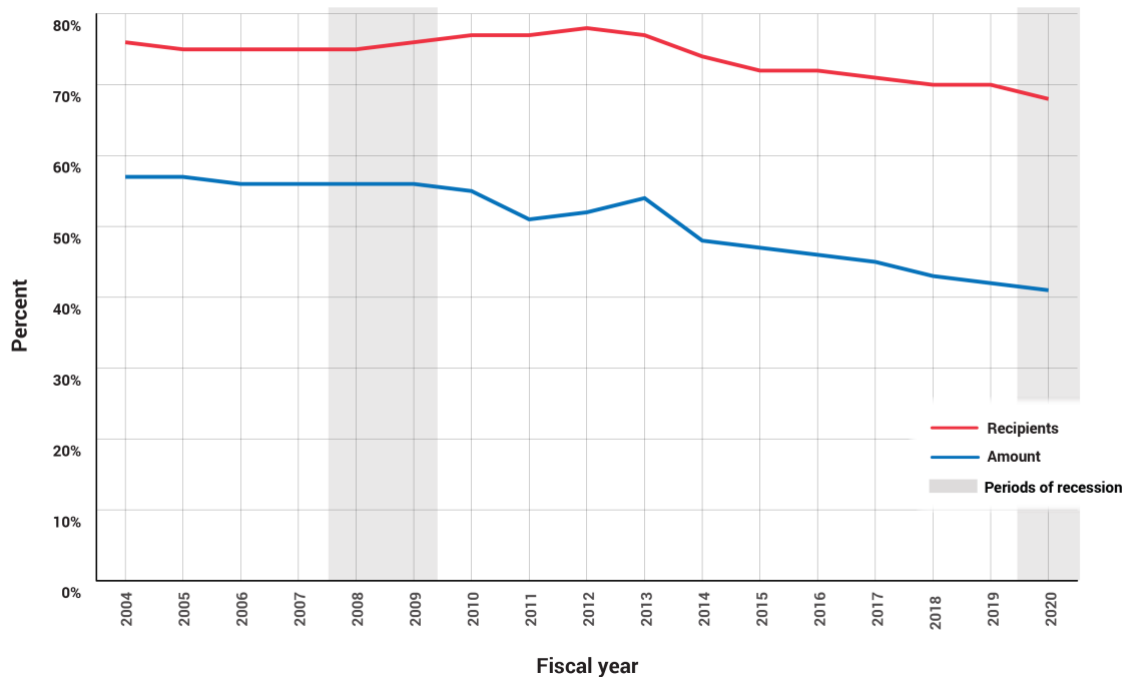
To code the eligibility criteria for state need, merit, and combination programs, we selected the most inclusive program in the state that does not have field of study restrictions. For instance, if a state had two merit aid programs, one with a 3.5 high school GPA requirement and another with a 3.0 high school GPA requirement, we coded eligibility criteria based on the more inclusive program with the 3.0 high school GPA requirement. The final set of eligibility criteria for our analytical dataset included: income (need), demonstrated need (need), GPA (merit), college entrance exam (merit), income (combo), demonstrated need (combo), GPA (combo), and college entrance exam (combo).

The outcomes included enrollment, graduation rate, and completions. Enrollment measures included total undergraduate and full-time undergraduate for the fall. Graduation rate and completions measures included associate and bachelor's degrees. For the enrollment measures, we linked the state financial aid data so that the FY occurs at the same time as the fall enrollment measure. For the graduation rate and completion measures, we linked the state financial aid data so that the state financial aid FY occurs during the first year of enrollment based on earning a degree in 150% of expected time to completion.

¹⁰ We did not include programs that solely funded certificate-seeking students or that operated as loan forgiveness programs. We also excluded 529 education savings plans.

Given the policy concerns that, over time, need-based aid has been crowded out by merit- and combo-based aid, and the equity concerns inherent within that shift, we explored how the percentage of total state aid devoted to need-based aid shifts over time. Figure 1 shows that both the number of recipients and the amount of need-based aid have been decreasing over time. While the change in recipients over time is relatively small (from nearly 76% of aid recipients in FY 2004 to 68% in FY 2020), the change in amount is fairly large. In FY 2004, the need-based aid amount is 57% of the total state financial aid amount (all in 2020 dollars). By FY 2020, this number drops over 15 percentage points to a little less than 41%. There is clear evidence that, among the state financial aid programs we included in our data, states have significantly reduced the percentage of money being provided based solely on students' financial need, though there is variation across states.

Figure 1. Need-based state aid as a percentage of total state aid over time.



Note. The blue line shows the percentage of the total state aid amount that is disbursed based on need (the underlying amounts have been adjusted for inflation and are in 2020 dollars). The red line shows the percentage of the total number of state aid recipients that is disbursed based on need. Fiscal years 2008, 2009, and 2020 are shaded in gray to visualize recessionary periods.

We found little consistent evidence of a relationship between the amount of aid per recipient and student outcomes. However, we did find some consistent, practically significant correlations between eligibility criteria and student outcomes (see Table 1). Our most consistent finding was for combo-based aid and the college entrance exam eligibility criteria. Among institutions located in states with combo-based aid, requiring

a college entrance exam for eligibility was associated with smaller enrollments and lower graduation rates compared to institutions that did not require the exams (approximately 11 and 6 percentage point lower associate and bachelor’s graduation rate, respectively). It may be that the other types of academic merit eligibility criteria (e.g., coursework, state standardized tests) are more suitable as criteria for combo-based aid when pursuing student success. Though, given the inconsistent findings across subgroups of students and design types, the field and country would benefit from more research examining the holistic state financial aid environment in order to create a politically viable and operationally effective financial aid strategy for state policymakers seeking to ensure an affordable college education.

Table 1. Relationship between eligibility requirements for state financial aid and student outcomes.

	Enrollment		Graduation rate		Completions	
	All	FT	Associate	Bachelor's	Associate	Bachelor's
Panel A: Need-based aid requirements						
Income	53.363* (26.408)	9.663 (14.455)	-0.242 (2.217)	1.720 (2.659)	77.278 (45.807)	187.199 (122.159)
Demonstrated need	42.247 (26.359)	-4.225 (16.108)	-3.717** (1.307)	-0.671 (1.899)	47.796 (39.839)	-105.345 (113.306)
N	23333	23333	12151	6708	15807	7155
Panel B: Merit-based aid requirements						
GPA	116.341** (28.852)	32.344 (16.755)	2.620 (4.152)	-3.057 (3.018)	-24.367 (79.488)	-62.750 (87.796)
SAT	-6.146 (26.743)	-9.315 (16.990)	-4.732 (2.496)	-2.064 (1.891)	144.825* (53.128)	-180.260 (118.412)
N	11581	11581	5416	3836	7854	4129
Panel C: Combo-based aid requirements						
Income	17.435 (50.555)	11.524 (17.681)	5.439 (3.451)	2.409 (2.221)	102.069 (99.392)	-162.937 (123.211)
Demonstrated need	-29.027 (33.458)	-3.599 (11.796)	4.350 (2.858)	-0.082 (1.603)	84.481 (90.290)	-233.598* (97.602)
GPA	37.698 (65.219)	27.510 (28.465)	-6.765 (3.573)	-4.800 (2.547)	-81.008 (109.900)	106.504 (209.525)
SAT	-75.264* (32.873)	-39.732** (14.281)	-10.701* (4.001)	-5.906** (1.763)	-29.615 (88.901)	-27.854 (181.832)
N	12091	12091	6216	3256	8074	3648

Note. The first two outcomes are forms of enrollment (total, full-time), the second two are 150% of on-time completion graduation rates (associate and bachelor’s), and the third two are completions (associate and bachelor’s). Panel A presents estimates for a model including the need-based aid requirements (income and demonstrated need). Panel B presents estimates for a model including the merit-based aid requirements (GPA and college entrance exam). Panel C presents estimates for a model including the combo-based aid requirements (income, demonstrated need, GPA, and college entrance exam). Covariates for all models include: total undergraduate enrollment, in-district/in-state tuition, federal grant percentage, federal grant average award, institutional grant percentage, institutional grant average award, state unemployment rate, region, sector, urbanicity, and year fixed effects. Models also include three binaries for whether the respective type of aid (need-, merit-, or combo-based) can be used in public two-year, not-for-profit private, or for-profit institutions. p<.01**, p<.05*

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