SHEEO
State Higher Education Executive Officers Association

THE RELATIONSHIP BETWEEN FUNDING AND STUDENT OUTCOMES AT PUBLIC, TWO-YEAR MINORITY SERVING INSTITUTIONS

July 2025

ADELA SOLIZ
BENJAMIN RUBIN

The Relationship Between Funding and Student Outcomes at Public, Two-Year Minority Serving Institutions

Though they have experienced recent enrollment declines, historically, community colleges (i.e. public two-year colleges) have served a larger portion of undergraduates than any other institution type. They also serve a more diverse group of students than other institution types and do this with less funding, on average, than four-year institutions. Community colleges may also rely on the state for a larger portion of their funding than institutions in other sectors. Among public two-year colleges, 188 are classified as Hispanic-Serving Institutions (HSIs), 11 are Historically Black Colleges (HBCs), and 34 are Predominantly Black Institutions (PBIs) (Nguyen et al., 2023). Recent research suggests that inequities may also exist within sectors across institutions, with Minority Serving Institutions (MSIs) receiving less funding per-pupil, on average, than institutions that primarily serve white students (PWIs) (Knott, 2023).

Inequities in access to public funding are particularly problematic if changes in institution-level funding affect student persistence and completion. Though a growing body of literature estimates the causal effect of changes in institutional funding on student outcomes (Bound & Turner, 2007; Deming & Walters, 2017), not all studies include community colleges and, to our knowledge, no study explicitly explores the relationship between funding, spending and student outcomes at public two-year MSIs. Our paper starts to fill this gap in the literature. Making use of data from the Integrated Postsecondary Education Data System (IPEDS) from 2014 to 2020, we estimate the causal effect of MSI-targeted grants on college spending and student outcomes at HSIs and PBIs.

Specifically, we will answer the following research questions: How does receiving MSI-targeted funding affect college spending and student outcomes at public two-year MSIs? How does this vary by community college subgroup (HSI or PBI)?

Literature Review

Public funding for higher education varies across states and institution types. In fiscal year 2022, state and local governments gave approximately $121 billion to higher education, or $10,237 per FTE (Kunkle & Laderman, 2022). However, appropriations per FTE range widely across states, from $3,699 in New Hampshire to $22,970 in Illinois (Kunkle & Laderman, 2022). Funding also varies by institution type: states gave $8,191 in appropriations per FTE to public four-year colleges and $6,297 in appropriations per FTE to public two-year colleges (Kunkle & Laderman, 2022). Minority-serving institutions may face unique challenges in obtaining equitable funding from public sources. In 2023, the Departments of Education and Agriculture sent letters to states that have historically underfunded HBCUs (Knott, 2023). Other research has also found that MSIs are systematically underfunded compared to peer institutions (Cunningham et al., 2014; Vargas, 2018; Williams & Davis, 2019; Partridge, 2023). Inequitable funding patterns are particularly problematic given the link between public funding for higher education and student outcomes demonstrated in the literature.

A handful of descriptive studies have explored the relationship between institutional spending and credential completion at community colleges. Calcagno et al. (2008) and Clotfelter et al. (2013) find that college spending, for example, on instruction or student services, is not correlated with degree completion or credit accumulation at public two-year colleges. Ishitani and Kamer (2020) build on this work by using Carnegie classifications to separate the colleges in their sample into three categories: high

transfer, high career and technical, and mixed transfer and career and technical. These classifications are based on the types of credentials these institutions typically produce. They find that spending on instruction is positively correlated with graduation within three years at colleges that focus primarily on transfer, but not at schools primarily focused on career and technical education. Though these studies start to explore the relationship between spending and student outcomes at community colleges, none of them can rule out selection bias.

Bound and Turner (2007) seek to estimate a causal link between state funding for higher education and student outcomes. They make use of data from IPEDS and leverage variation in state appropriations for higher education to demonstrate that declines in funding decrease degree attainment in public four-year institutions. Other researchers, building on this work, have shown, first, that increases in state funding for higher education increase enrollment and completion not just at four-year institutions, but also at community colleges (Deming & Walters, 2018; Cummings et al., 2021; Soliz & Ecton, 2023). Second, Deming and Walters (2018) demonstrate that institutional spending patterns mediate the effect of changes in public funding on student outcomes. Cummings et al. (2021) use simulations to compare the possible impacts of increasing subsidies to institutions versus increasing aid to students. These authors conclude that increasing funding to colleges and universities will have a bigger effect on degree completions than increasing student aid. We contribute to this literature by exploring the effects of federal grant aid on spending and student outcomes at public, two-year Minority Serving Institutions.

Theoretical Framework

Considering the Supply Side

Though much of the literature in higher education policy focuses on programs affecting the student, or demand side, of the educational marketplace, policies affecting institutions, or the supply side, also affect college access and completion rates. Because the number of seats available in higher education may not be fully elastic (i.e., easily able to change) in response to changes in demand, limited capital or instructional capacity could restrict access. Accordingly, increases in funding could allow schools to raise capacity levels. Research confirms that increasing funding can improve student outcomes, including enrollment and completion (Bound et al., 2010, 2019; Bound & Turner, 2007; Chakrabarti et al., 2020; Soliz & Ecton, 2023), and that how institutions spend money impacts student outcomes (Deming & Walters, 2018).

Valuing Minority-Serving Institutions

Several scholars have called for research on HBCUs and other MSIs to take a strengths-based, institutional perspective (Baker et al., 2018; Winkle-Wagner et al., 2020; Williams et al., 2021). Though they may be underfunded, a range of work has established the positive effect of MSIs on students, including improved graduation rates, future earnings, and associate degree completions (Gordon et al., 2019; Boland et al., 2018, 2021). Williams et al. (2021) argue that it is important to examine institutional factors that influence persistence at MSIs, rather than only focusing on student characteristics (Williams et al., 2021; Arroyo & Gasman, 2014). Some features of HBCUs that may positively affect persistence include small class sizes, the development of a “home away from home,” and a campus-wide culture of success (Perna et al., 2009; Conrad & Gasman, 2015; Winkle-Wagner et al., 2020). Given the important

role they play in increasing access and persistence for underserved student populations, it is particularly important to better understand funding patterns at MSIs.

There are two major categories of MSIs. Mission-based MSIs were "established with the specific purpose of addressing the educational needs of their respective communities," while enrollment-based MSIs are "historically white institutions that have reached a federally defined demographic threshold to qualify for their MSI status" (Nguyen et al., 2023). Much of the extant literature on the benefits of MSIs is focused on HBCUs. We extend the benefits ascribed to HBCUs to other MSIs, but we acknowledge that reaching federal designation thresholds does not necessarily mean an institution is committed to serving that population of students (Nguyen et al., 2023). Though it is beyond the scope of the current study, more research is needed to better understand how enrollment-based MSIs support their minoritized student populations.

Background

In 2017, there were 1,332 MSIs in total, including both eligible institutions that were not funded at the time and institutions funded in that year (Espinoza, 2024). There are seven MSI designations in total, including Asian American Native American Pacific Islander-Serving Institutions (ANNAPISIs), Alaska Native and Native Hawaiian Serving Institutions (ANNHs), Historically Black Colleges & Universities (HBCUs), Hispanic-Serving Institutions (HSIs), Native American-Serving Non-Tribal Institutions (NASNTIs), Predominately Black Institutions (PBIs), and Tribal Colleges and Universities (TCUs) (Case, n.d.). Additionally, within each designation, there are different programs through which institutions may receive funding; for example, HSI programs offered through the Department of Education include the Developing Hispanic-Serving Institutions (DHSI) Program, the Hispanic-Serving Institutions – STEM (HSI-STEM) Program, and the Promoting Postbaccalaureate Opportunities for Hispanic Americans (PPOHA) program (U.S. Dept. of Ed., n.d.).

Of the seven total, HBCUs and TCUs are the two mission-based designations. HBCUs were originally created by the second Morrill Land-Grant Act of 1862 and later recognized in the Higher Education Act of 1965 (PNPI, 2024). TCUs were created and funded by the Tribally Controlled Colleges and Universities Assistance Act of 1978 and the Equity in Educational Land-Grant Status Act of 1994 (U.S. Dept. of Ag., n.d.). To be eligible for the other five designations, institutions need to meet requirements for enrollment of students from a given racial or ethnic background, percentage of students receiving federal aid or Pell grants, and institutional expenditures laid out in the Higher Education Act (Nguyen et al., 2023). The enrollment threshold of a given group includes 10% of enrollment comprising Native American students for NASNTIs, 10% Native Hawaiian students and 20% Alaska Native students for ANNHSIs, 25% of Hispanic students for HSIs, and 40% Black students for PBIs (Nguyen et al., 2023). Schools may meet the threshold for number of low-income students in two ways: (1) at least 50% of students must receive Pell, Federal Work Study, or the Federal Supplemental Educational Opportunity Grant, or (2) have more students receiving Pell than the median percentage at comparable institutions offering similar instruction (Eligibility Designations, 2024). To meet the institutional expenditures requirement, the core expenses of eligible institutions must be less than the average core expenses of comparable institutions offering similar instruction (Eligibility Designations, 2024). Once a school applies for and becomes a federally designated MSI, they are eligible to apply for a set of grants only available to other MSIs. In this paper, we focus on HSIs and PBIs because these are the two most common types of two-year MSIs and so provide the biggest potential sample. We leverage variation across public two-

year MSIs in the receipt of these grants to estimate the effect of increases in funding on spending and student outcomes at minority-serving community colleges.

Data and Methods

We make use of data primarily from the Integrated Postsecondary Education Data System (IPEDS) which provides detailed information on finances, student enrollments, and completions, all aggregated at the college level. In order to identify MSIs, we use detailed information accessible from the U.S. Department of Education (ED) describing which institutions have achieved MSI status, as well as which of those schools have received one or more MSI-targeted grants. Though non-mission driven MSIs have existed since 1992, ED data identifying MSIs is only available from 2017. Our treatment group is comprised of public, two-year HSIs or PBIs that received funding from any of the federal grant programs aimed at increasing funding for MSIs in 2017. Though there are multiple grant programs potentially providing funds for undergraduates at HSIs and PBIs, the funds can be used for a variety of activities at the institutions' discretion, so, in order to maximize our potential sample size, we group all colleges that received grants in 2017 together, rather than separating colleges out by specific grant program.

There are multiple possible comparison groups for this analysis. In order to minimize selection bias, our first goal is to identify a comparison group that is similar to institutions in our treatment group but that didn't receive funding, perhaps by chance. In the first comparison group, we include public two-year institutions that achieved MSI status in 2017, but that we never observe winning a grant (e.g. did not win a grant between 2017 and 2023). For example, Solano County Community College became an HSI in 2017, but was never awarded one of the MSI-focused grants, according to the most recent year of available data. Given the historical inequities in access to funding experiences by MSIs, our second goal is to explore how funding and spending at our treatment group institutions compares to non-MSI community colleges. For the second comparison group, we make use of public two-year institutions that are in the same states as the MSIs that received grants in 2017 (i.e., the treatment group). Because these institutions are subject to the same state policies as the treatment group colleges and likely share the same governance structures, we hypothesize that they may make a reasonable second comparison group for the funded MSIs.

In our differences-in-differences model the first difference is whether or not an institution received an MSI-targeted grant during the sample period and the second difference is before and after 2017. We run the following time-series model in which t-1 (2016) is the omitted year,

$$(1)\quad y_{it} = \beta_{-3}(\alpha_t * Funded_i) + \beta_{-2}(\alpha_t * Funded_i) + \beta_0(\alpha_t * Funded_i) + \beta_1(\alpha_t * Funded_i) + \beta_2(\alpha_t * Funded_i) + \beta_3(\alpha_t * Funded_i) + \gamma_i + \alpha_t + \epsilon_{it}$$

in which y are outcomes for institution i, in time t. Outcomes include institutional spending variables, total fall headcount enrollment, as well as enrollment by race/ethnicity, certificate completions, and associate degree completions. γ_i are college fixed effects, which control for any non-time varying differences across institutions. "Funded" is a binary variable coded 0 for public, two-year MSIs that never received a grant and 1 for those that did. Our preferred specification does not include covariates, but our results are robust to the inclusion of county and state-level covariates, including population levels, unemployment rate, and median income. The coefficients of interest are the β_t on the

treatment-year interactions after treatment. These coefficients estimate the effect on the outcomes, for treated colleges, of receiving funding. We estimate robust standard errors.

The main identifying assumption behind a differences-in-differences analysis is that the trends in outcomes between the treatment and comparison groups would have been parallel in the absence of treatment. Equation 1 allows us to test that assumption by observing the coefficients on the funded*year interactions in the years before treatment (i.e., before 2017). We address the parallel trends assumption as we go through our results below.

Limitations

Our analytical strategy is not an ideal application of differences-in-differences methodology. In a textbook example, the estimating variation would be a change or event that randomly affected some observations in our sample (in this case, colleges), but not others. In the present study, colleges are selecting into the process of applying for a grant and the grants (the treatment) may be distributed to colleges based on some factors, such as a culture of high-quality student advising, that also affect the outcomes we are examining. This process of selection could bias our models so that we find positive outcomes at colleges that receive grants, but those positive outcomes are due to the fact that the colleges were highly functioning to begin with, not because they received additional funding. We address this weakness of our study in multiple ways. First, *Table 1* displays statistics describing the treatment and comparison group colleges before the treated colleges were awarded the MSI grants. This shows the extent to which treatment group colleges are different from the comparison groups. Similarly, the event study models displayed in *Figures 2* through *9* compare trends in outcomes before treatment. These plots allow us to observe if changes in outcomes after treatment appear to be the continuation of a trend or a discontinuous response to being awarded a grant. Finally, we would argue that there is always some random variation in any grant award process, partly because of the subjective nature of determinations of merit.

Results

Table 1 describes the sample and compares public, two-year HSIs and PBIs that were awarded federal grants in 2017 (column 1) with those that were not awarded grants (column 2) and other community colleges in the same states as the two-year MSIs in our sample (column 3). The first row suggests that, on average, the MSIs have larger student bodies than the non-MSI community colleges. By design, the MSIs also enroll more Black and Hispanic students, as well as students who were awarded Pell Grants. Though the numbers of certificate and associate degree completions appear to be larger at the MSIs, as a percent of enrollment these numbers are similar across groups. Institutional spending on Student Services, Academics and Instruction (all in dollars per pupil) are similar across the three groups of institutions. MSIs appear to be located in counties with slightly higher poverty rates than non-MSIs but county unemployment and median income levels are similar across groups.

We began by plotting federal, state and local grants and appropriations for public, two-year MSIs that were awarded federal grants in 2017 (solid line) with public, two-year MSIs that were not awarded grants (long dash) and other community colleges in the same states as two-year MSIs (short dash) in *Figure 1*. Funding amounts are adjusted for inflation and in dollars per full-time equivalent student. We wanted to observe, descriptively, whether the MSIs in our sample appeared to receive less funding than the non-MSI and also whether any increases in funds for treated MSIs appeared to potentially give them

more resources than other colleges, or only brought their resources up to the same level. The plots in *Figure 1* suggest that two-year MSIs receive similar amounts of public funding as other community colleges in the same states. In the first plot, which displays trends in federal grants and appropriations, there is some visual evidence that the additional funding colleges may receive through MSI-targeted grants allows them to obtain a similar amount of federal resources as non-MSI community colleges, rather than increasing their resources above and beyond other colleges. Finally, though the plots in *Figure 1* suggest that MSIs receive similar amounts of public funding as other community colleges in the same states, the descriptive statistics in *Table 1* demonstrate that the MSIs, on average, enroll more low-income students than other community colleges. Thus, the MSIs have fewer resources for the students who may need the most support.

Figure 2 displays coefficients from the time series model estimating the effect of being awarded an MSI-targeted grant on federal grant revenue for funded MSIs. The comparison group is MSIs that were not awarded funding. The first plot in *Figure 2* suggests that federal grants revenue at the colleges that received the MSI-targeted grant did increase, compared to MSIs that never received this form of funding, but the difference is not statistically significant. The second plot suggests that this difference is driven by funded HSIs. Because there are not statistically significant differences in federal grants revenue received for schools that were awarded an MSI-targeted grant, we would not expect to find effects on funding or student outcomes. Nevertheless, we run those models, though we only display findings for the combined and HSI-only samples. Appendices A through D display spending and student-level outcomes for the PBI-only sample.

Figure 3 displays spending outcomes for public two-year MSIs funded in 2017, compared to those not funded for the combined sample of HSIs and PBIs (top) and just HSIs (bottom). All of the plots in *Figure 3* show evidence that the models meet the parallel trends assumption. There are not statistically significant differences in the spending trends before treatment. However, as expected, given that there was not a significant increase in federal grants revenue, there is also no statistically significant evidence of changes in spending on student services, academics, or instruction after colleges in the treatment group were awarded funding. *Figure 4* displays enrollment and completion outcomes for public two-year MSIs funded in 2017, compared to those not funded for the combined sample of HSIs and PBIs. In all cases, at least two years before treatment, the outcome trends meet the parallel trends assumption (no statistically significant differences). The plots suggest that treatment colleges may have had increases in the number of Pell-awarded students enrolling and certificate completions, though these changes are not statistically significant. The graphs in *Figure 5* demonstrate that the differences are driven by HSIs.

Funded MSIs Compared to Other Community Colleges

Figure 6 compares revenue from federal grants at public two-year HSIs and PBIs that received grants compared to other, non-MSI, community colleges in the same state. The first plot displays results from a sample in which the treated group includes both HSIs and PBIs, the second plot is for a treated sample that includes only HSIs and the treated sample for the third plot includes only PBIs. The plots suggest that before the treated colleges were awarded grants in 2017, there were not statistically significant differences in federal grants revenue reported by the two groups of institutions. However, after 2017, the funded MSIs reported statistically significantly more revenue from federal grants than the other community colleges in the same states, and this difference was driven by the HSIs in the sample.

Given that we find evidence of a first stage in the sample of HSIs but not PBIs, we will focus on interpreting those results, though *Figure 7* still displays the results for the pooled sample as well. The bottom panel of *Figure 7* displays spending outcomes for funded HSIs compared to other community colleges in the same states. The event study plots suggest that the trends in spending outcomes were not statistically significantly different before the HSIs were awarded grants. At the same time, these plots suggest that the funded HSIs increased spending on student services and instruction after receiving MSI-targeted grants. There also appears to have been at least a temporary increase in academic spending at HSIs in the year immediately after they were awarded the grants.

Figure 8 shows enrollment and completion outcomes for public two-year HSIs funded in 2017, compared to other community colleges in the state (results for the combined sample are displayed in Appendix E). The pre-treatment trends in these plots do not provide strong evidence that the treatment and comparison group outcomes were trending in parallel before 2017. Rather, enrollment, certificate completions and associate degree completions all appear to be trending upward at the treatment colleges, relative to the comparison group colleges, in the pre-treatment period. Therefore, though the funded HSIs in the treatment group have statistically significant increases in enrollment, certificate completions and associate degree completions after receiving MSI-targeted grants in 2017, it is not possible to determine from our analysis whether these effects are due to the increase in funding or the continuation of secular trends.

Discussion

In this paper we have used institution-level data to explore the relationship between funding and student outcomes at public, two-year Minority Serving Institutions. Our first important finding is a simple observation—not all federally designated MSIs actually receive the grants targeted at these institutions. Though we are not able to observe which institutions apply for funding, the fact that not all receive funding suggests a potential weakness of the program. If some institutions don't receive funding because of the administrative burden of applying for it, this has negative implications for equity and suggests a lack of commitment to supporting these institutions.

The fact that not all institutions receive funding also suggests a role for state policy. State programs could help to fill this gap in access to federal funding for MSIs. First, states should also provide additional funding for institutions that serve significant numbers of historically underserved students, including low-income and minoritized students. Moreover, states could build on the federal program, which, as described above, provides fairly non-targeted funding by providing eligible [two-year] MSIs with targeted grants to support evidence-based practices such as high-touch advising.

Though we find evidence that federal grants revenue did increase at two-year MSIs (particularly HSIs) that received MSI-targeted grants, we found mixed evidence as to how this translates to institutional spending. When compared to other colleges in the same states that are not MSIs, funded HSIs spend more on student services, instruction, and academics, at least in the year directly after being awarded the funding. It is possible that increases in spending lead to increases in credential completion, but our findings for completion outcomes are inconclusive. Though both certificate completions and associate degree completions increase at HSIs after they are awarded funding, at least in the case of associate degree completions, the outcomes at these colleges were already trending in this direction.

Though institutions state in their applications for MSI grants what they propose to do with the money, we know of no paper that explicitly explores how institutions use this funding. This is a particularly important question for community colleges, not all of which have well-developed student activities offices that would be prepared and positioned to offer targeted support to a particular group of students. Perhaps, given their lack of resources and, possibly, lack of student services infrastructure, public two-year MSIs need much more funding than the average four-year institution in order to really make a difference for students.

References

Arroyo, A.T. & Gasman, M. (2014). An HBCU-Based Educational Approach for Black College Student Success: Toward a Framework with Implications for All Institutions. *American Journal of Education, 121*(1), 57-85. https://doi.org/10.1086/678112

Baker, D.J., Arroyo, A.T., Braxton, J.M., Gasman, M., & Francis, C.H. (2021). Expanding the Student Persistence Puzzle to Minority Serving Institutions: The Residential Historically Black College and University Context. *Journal of College Student Retention: Research, Theory & Practice, 22*(4), 676-698. https://doi.org/10.1177/1521025118784030

Boland, W.C., Gasman, M., Nguyen, T., & Samayoa, A.C. (2018). The Master Plan and The Future of California Higher Education: Assessing the Impact of State Policy on Minority-Serving Institutions. *American Educational Research Journal, 55*(6), 1369-1399. https://doi.org/10.3102/0002831218787463

Boland, W.C., Gasman, M., Samayoa, A.C., & Bennett, D. (2021). The Effect of Enrolling in Minority Serving Institutions on Earnings Compared to Non-minority Serving Institutions: A College Scorecard Analysis. *Research in Higher Education, 62,* 121-150. https://doi.org/10.1007/s11162-019-09580-w

Bound, J., Braga, B., Khanna, G., & Turner, S. (2019). Public universities: The supply side of building a skilled workforce. *RSF: The Russell Sage Foundation Journal of the Social Sciences, 5*(5), 43–66. https://doi.org/10.7758/RSF.2019.5.5.03

Bound, J., Lovenheim, M., & Turner, S. (2010). Why have college completion rates declined? An analysis of changing student preparation and collegiate resources. *American Economic Journal: Applied Economics, 2*(3), 129–157. https://doi.org/10.1257/app.2.3.129

Bound, J., & Turner, S. (2007). Cohort crowding: How resources affect college attainment. *Journal of Public Economics, 91*(5), 877–899. https://doi.org/10.1016/j.jpubeco.2006.07.006

Calcagno, J. C., Bailey, T., Jenkins, D., Kienzl, G., & Leinbach, T. (2008). Community college student success: What institutional characteristics make a difference? *Economics of Education Review, 27*(6), 632–645.

Chakrabarti, R., Gorton, N., & Lovenheim, M. (2020). *State investment in higher education: Effects on human capital formation, student debt, and long-term financial outcomes of students* (NBER Working Paper No. 27885). National Bureau of Economic Research. https://www.nber.org/system/files/working_papers/w27885/w27885.pdf

Clotfelter, C., Ladd, H., Muschkin, C., and Vigdor, J. (2013) Success in community college: Do institutions differ? *Research in Higher Education. 54*, 805-824.

Conrad, C., & Gasman, Marybeth. (2015). *Educating a Diverse Nation: Lessons from Minority-Serving Institutions.* Harvard University Press. https://doi.org/10.4159/9780674425477

Cummings, K., Laderman, S., Lee, J., Tandberg, D., & Weeden, D. (2021, May). *Investigating the Impacts of State Higher Education Appropriations and Financial Aid.* State Higher Education Executive Officers Association. https://sheeo.org/wp-content/uploads/2021/05/SHEEO_ImpactAppropationsFinancialAid.pdf

Cunningham, A., Park, E., & Engle, J. (2014, February). *Minority-Serving Institutions: Doing More with Less.* Institute for Higher Education Policy. https://www.ihep.org/publication/minority-serving-institutions-doing-more-with-less/

Deming, D.J. & Walters, C.R. (2018). *The Impact of State Budget Cuts on U.S. Postsecondary Attainment.* National Bureau of Economic Research. https://static1.squarespace.com/static/60832ecef615231cedd30911/t/608abee85c71ff3471f30b51/1619705577660/DW_April2018.pdf

Gansemer-Topf, A.M. & Schuh, J.H. (2006). Institutional Selectivity and Institutional Expenditures: Examining Organizational Factors that Contribute to Retention and Graduation. *Research in Higher Education, 47*(6), 613-642. https://doi.org/10.1007/s11162-006-9009-4

Gordon, E.., Hawley, Z.B., Kobler, R.C., & Rork, J.C. (2021). The Paradox of HBCU Graduation Rates. *Research in Higher Education, 62*(3), 332-358. https://doi.org/10.1007/s11162-020-09598-5

Knott, K. (2023, September 20). *States Underfunded Historically Black Land Grants by $13 Billion Over 3 Decades.* https://www.insidehighered.com/news/government/2023/09/20/states-underfunded-black-land-grants-13b-over-30-years

Kunkle, K. & Laderman, S. (2022). *State Higher Education Finance.* State Higher Education Executive Officers Association. https://shef.sheeo.org/report/

Nguyen, M.H., Ramirez, J.J., & Laderman, S. (2023). What Counts as a Minority-Serving Institution? Toward the Utilization of a Standardized and Uniform Definition and Typology. *Education Researcher, 52*(3), 174-179. https://doi.org/10.3102/0013189X221105861

Partridge, S. (2023). *The 2023 Farm Bill must address inequities in the land-grant university system.* https://www.americanprogress.org/article/the-2023-farm-bill-must-address-inequities-in-the-land-grant-university-system/

Perna, L., Lundy-Wagner, V., Drezner, N.D., Gasman, M., Yoon, S., Bose, E., & Gary, S. (2009). The Contribution of HBCUS to the Preparation of African American Women for Stem Careers: A Case Study. *Research in Higher Education, 50*(1), 1-23. https://doi.org/10.1007/s11162-008-9110-y

Pike, G.R., Kuh, G.D., McCormick, A.C., Ethington, C.A., & Smart, J.C. (2011). If and When Money Matters: The Relationships Among Educational Expenditures, Student Engagement and Students' Learning Outcomes. *Research in Higher Education, 52*(1), 81-106. https://doi.org/10.1007/s11162-010-9183-2

Pike, G.R., Smart, J.C., Kuh, G.D., & Hayek, J.C. (2006). Education Expenditures and Student Engagement: When Does Money Matter? *Research in Higher Education, 47*(7), 847-872. https://doi.org/10.1007/s11162-006-9018-3

Ryan, J.F. (2004). The Relationship Between Institutional Expenditures and Degree Attainment at Baccalaureate Colleges. *Research in Higher Education, 45*(2), 97-114.

Ryan, J.F. (2005). Institutional Expenditures and Student Engagement: A Role for Financial Resources in Enhancing Student Learning and Development? *Research in Higher Education, 46*(2), 235-249. https://doi.org/10.1007/s11162-004-1601-x

Soliz, A. & Ecton, W. (2023). Did the American Reinvestment and Recovery Act Expand and Improve Vocational Training at Community Colleges? *Educational Evaluation and Policy Analysis, 45*(3), 464-481. https://doi.org/10.3102/01623737221129611

Terrence T. Ishitani & Jacob A. Kamer (2020). Institutional Characteristics and Expenditures: Their Effects on Graduation Rates at Three Different Types of Community Colleges. *Community College Journal of Research and Practice, 44:9*, 644-656, DOI:10.1080/10668926.2019.1630026

Vargas, N. (2018). Racial Expropriation in Higher Education: Are Whiter Hispanic Serving Institutions More Likely to Receive Minority Serving Institution Funds? *Socius: Sociological Research for a Dynamic World, 4*, 1-12. https://doi.org/10.1177/2378023118794077

Williams, K.L., Burt, B.A., Clay, K.L., & Bridges, B.K. (2019). Stories Untold: Counter-Narratives to Anti-Blackness and Deficit-Oriented Discourse Concerning HBCUs. *American Educational Research Journal, 56(2)*, 556-599. https://doi.org/10.3102/0002831218802776

Williams, K.L. & Davis, B.L. (2019, January). *Public and Private Investments and Divestments in Historically Black Colleges and Universities.* American Council on Education. https://www.acenet.edu/Documents/Public-and-Private-Investments-and-Divestments-in-HBCUs.pdf

Williams, K.L., Russell, A., & Summerville, K. (2021). Centering Blackness: An Examination of Culturally-Affirming Pedagogy and Practices Enacted by HBCU Administrators and Faculty Members. *Innovative Higher Education, 46*(6), 733-757. https://doi.org/10.1007/s10755-021-09562-w

Winkle-Wagner, R., Forbes, J.M., Rogers, S., & Blakely Reavis, T. (2020). A Culture of Success: Black Alumnae Discussions of the Assets-Based Approach at Spelman College. *The Journal of Higher Education, 91*(5), 653-673. https://doi.org/10.1080/00221546.2019.1654965

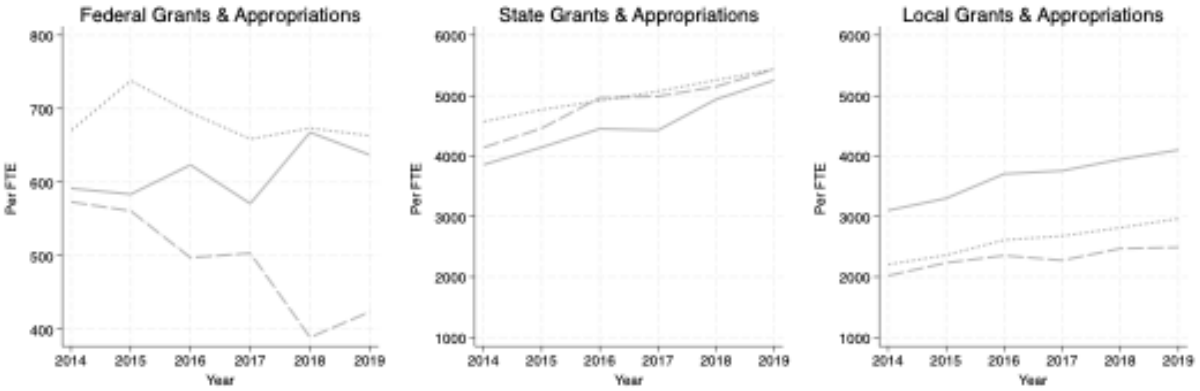
Table 1
Descriptive statistics comparing groups of public two-year colleges

	Funded MSIs	Not Funded MSIs	Non-MSIs
Enrollment	15579.60	13174.26	8431.56
	(13393.73)	(12584.26)	(9591.82)
Hispanic Student Enrollment	6288.86	4756.18	1532.76
	(6728.62)	(5676.57)	(3022.46)
Black Student Enrollment	2414.34	2268.46	1149.55
	(3102.81)	(2350.32)	(2002.30)
Students Awarded Pell	3731.45	3220.57	1923.10
	(3201.81)	(2616.64)	(2085.88)
Certificate Completions	715.69	668.21	461.23
	(743.56)	(741.64)	(587.92)
Associate Degree Completions	919.92	816.10	694.23
	(872.42)	(726.59)	(703.89)
Federal Grants	615.73	496.42	630.35
	(965.91)	(560.08)	(2163.03)
Student Services Spending	1798.77	1721.10	1607.59
	(1019.49)	(1007.81)	(1002.95)
Academic Spending	1279.47	1159.98	1266.79
	(828.87)	(708.22)	(897.95)
Instructional Spending	5731.00	5498.49	6386.85
	(1681.97)	(1365.90)	(2495.94)
Poverty Rate	17.24	17.61	15.38
	(5.43)	(6.08)	(5.53)
Unemployment Rate	5.86	5.86	5.29
	(2.50)	(1.57)	(1.33)
Median Income	605.90	581.85	590.41
	(75.12)	(100.03)	(80.07)
Observations	129	39	534

Note: Using U.S. Department of Education and IPEDS data, this table compares variables in 2016 for public, two-year HSIs and PBIs that were first funded in 2017-18; public, two-year institutions that were eligible to be an HSI or PBI in 2017-18 but not funded within our sample years; and public two-year colleges in the same states as the funded MSIs. The four financial variables are “per pupil” and have been divided by FTE enrollment. Poverty rate, unemployment rate, and median income are at the county level.

Figure 1

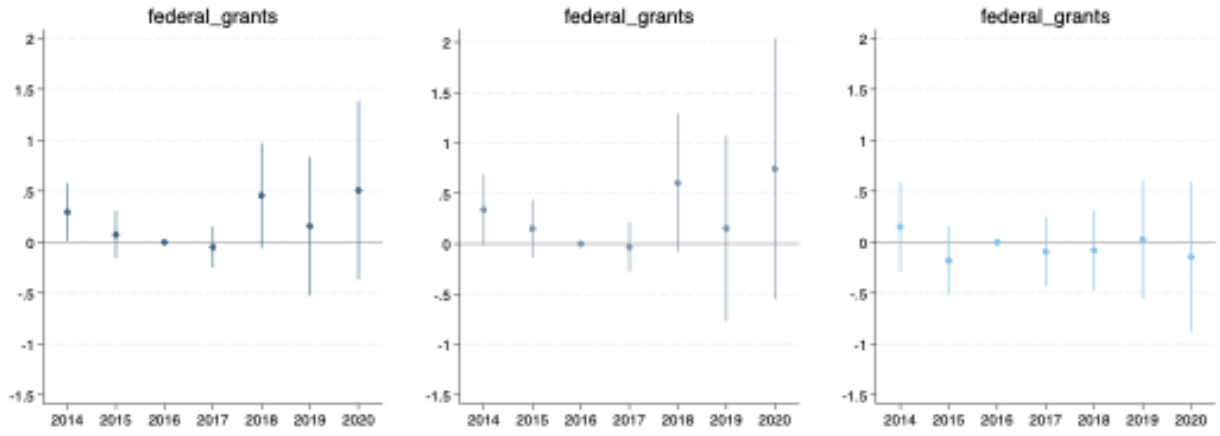
Federal, state, and local grants and appropriations to public two-year colleges that were funded MSIs in 2017 (solid line), not funded MSIs (long dash), or other community colleges in the same states as MSIs (short dash)



Note: Using U.S. Department of Education and IPEDS data, these plots show average federal, state and local grants and appropriations over time for public, two-year HSIs and PBIs who were first funded in 2017-18; public, two-year institutions who were first eligible to be a HSI or PBI in 2017-18 and never funded; and other public two-year colleges in the same states as the MSIs. Grants and appropriations variables have been adjusted for inflation and divided by that year's FTE enrollment to adjust for changes in enrollment. The solid lines are outcomes for the treatment group, the long-dashed lines are outcomes for institutions that never received funding in our sample years, and the short-dashed lines are for other institutions in the same states as the MSIs.

Figure 2

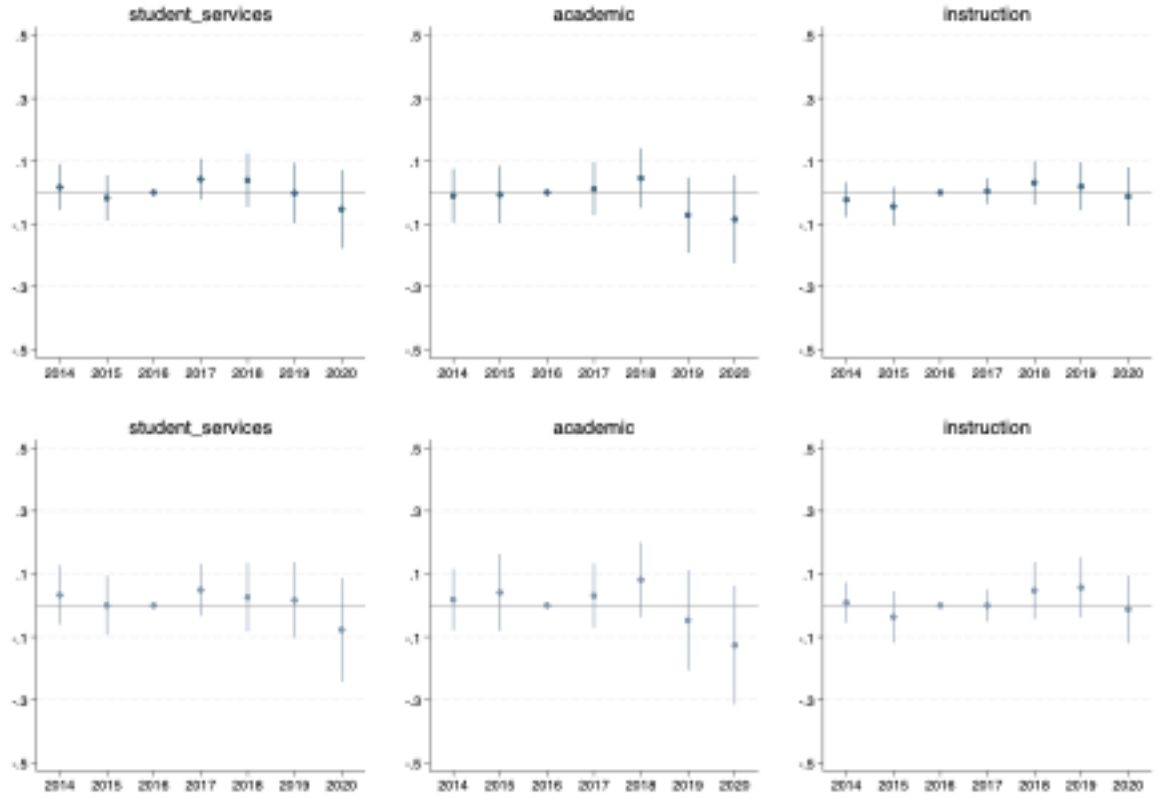
Federal grant revenue for public two-year MSIs funded in 2017, compared to those not funded for the combined sample of HSIs and PBIs, just HSIs and just PBIs, respectively



Note: Using U.S. Department of Education and IPEDS data, this plot displays coefficients from a time series model comparing federal grant revenue at public two-year MSIs funded in 2017 to those not funded within our sample years. The first plot is from a model that combined both HSIs and PBIs. The second plot is from a model that only includes HSIs, and the third plot only includes PBIs. The year before the treated group won their grants, 2016, is the omitted year.

Figure 3

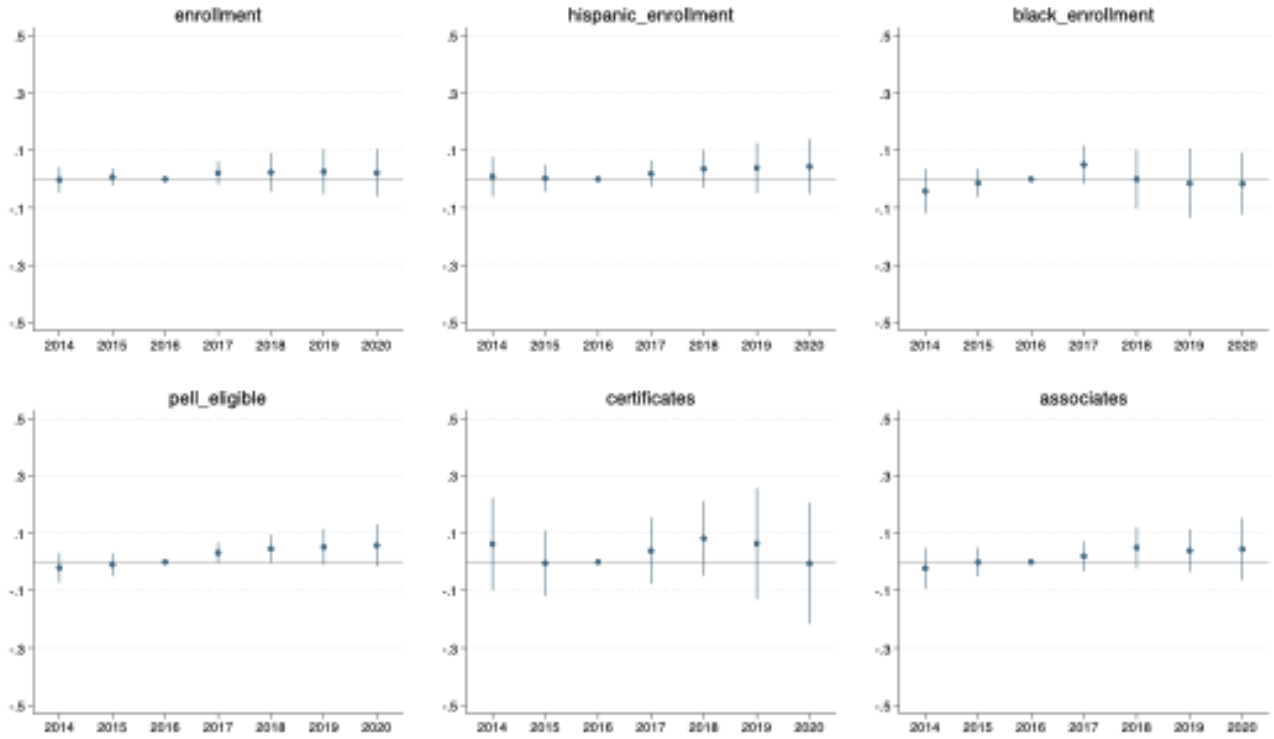
Spending outcomes for public two-year MSIs funded in 2017, compared to those not funded for the combined sample of HSIs and PBIs (top) and just HSIs (bottom)



Note: Using U.S. Department of Education and IPEDS data, this plot displays coefficients from a time series model comparing spending at public two-year MSIs funded in 2017 to those not funded within our sample years. The plots in the top panel are from models that combined both HSIs and PBIs. The plots in the bottom panel are from models that only include HSIs. The year before the treated group won their grants, 2016, is the omitted year. All outcome variables have been adjusted for inflation, divided by that year's FTE enrollment and log-transformed.

Figure 4

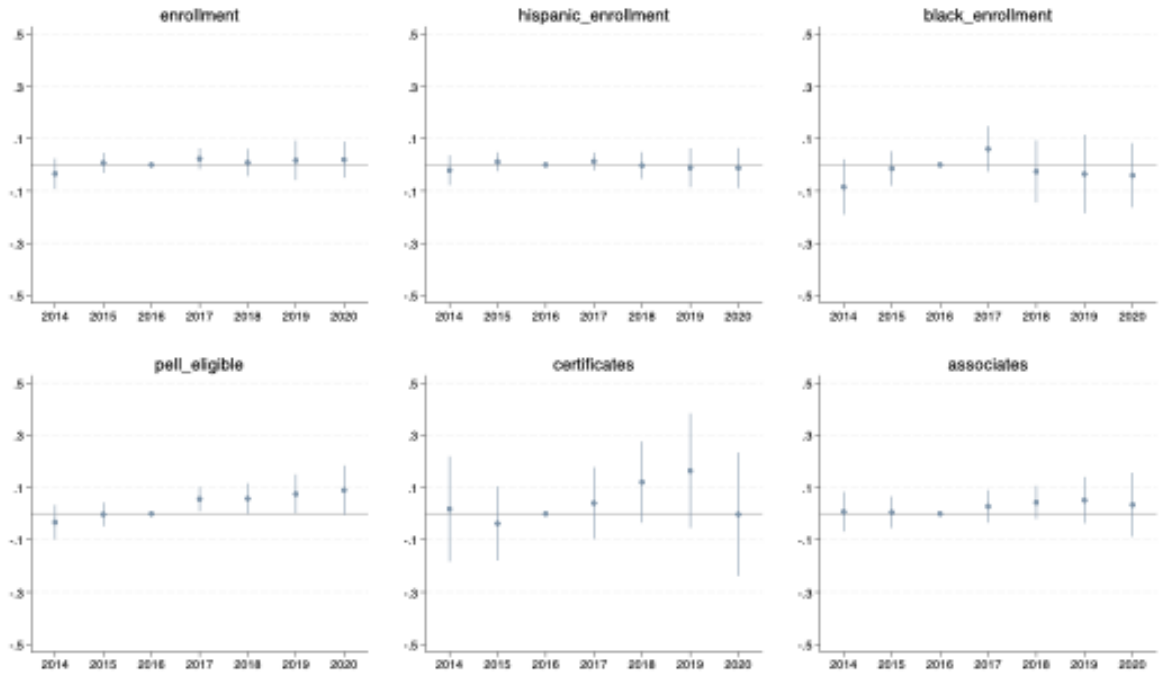
Enrollment and completion outcomes for public two-year MSIs funded in 2017, compared to those not funded for the combined sample of HSIs and PBIs



Note: Using U.S. Department of Education and IPEDS data, this plot displays coefficients from time series models comparing student outcomes at public two-year MSIs funded in 2017 to those not funded within our sample years. The year before the treated group won their grants, 2016, is the omitted year. All outcome variables have been log-transformed.

Figure 5

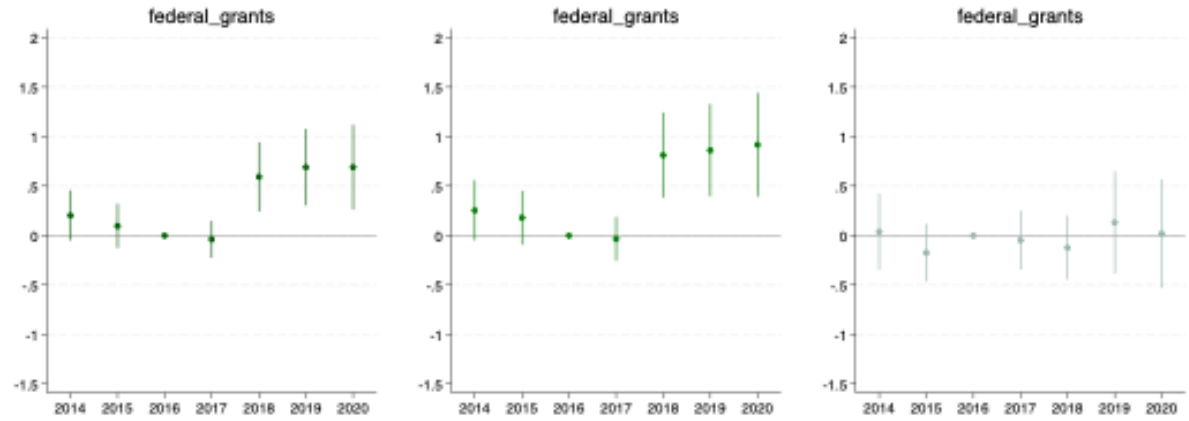
Enrollment and completion outcomes for public two-year MSIs funded in 2017, compared to those not funded for the sample of HSIs



Note: Using U.S. Department of Education and IPEDS data, this plot displays coefficients from time series models comparing student outcomes at public two-year MSIs funded in 2017 to those not funded within our sample years. The year before the treated group won their grants, 2016, is the omitted year. All outcome variables have been log-transformed.

Figure 6

Federal grant revenue for public two-year MSIs funded in 2017, compared to other community colleges in the same states for the combined sample of HSIs and PBIs, just HSIs and just PBIs, respectively

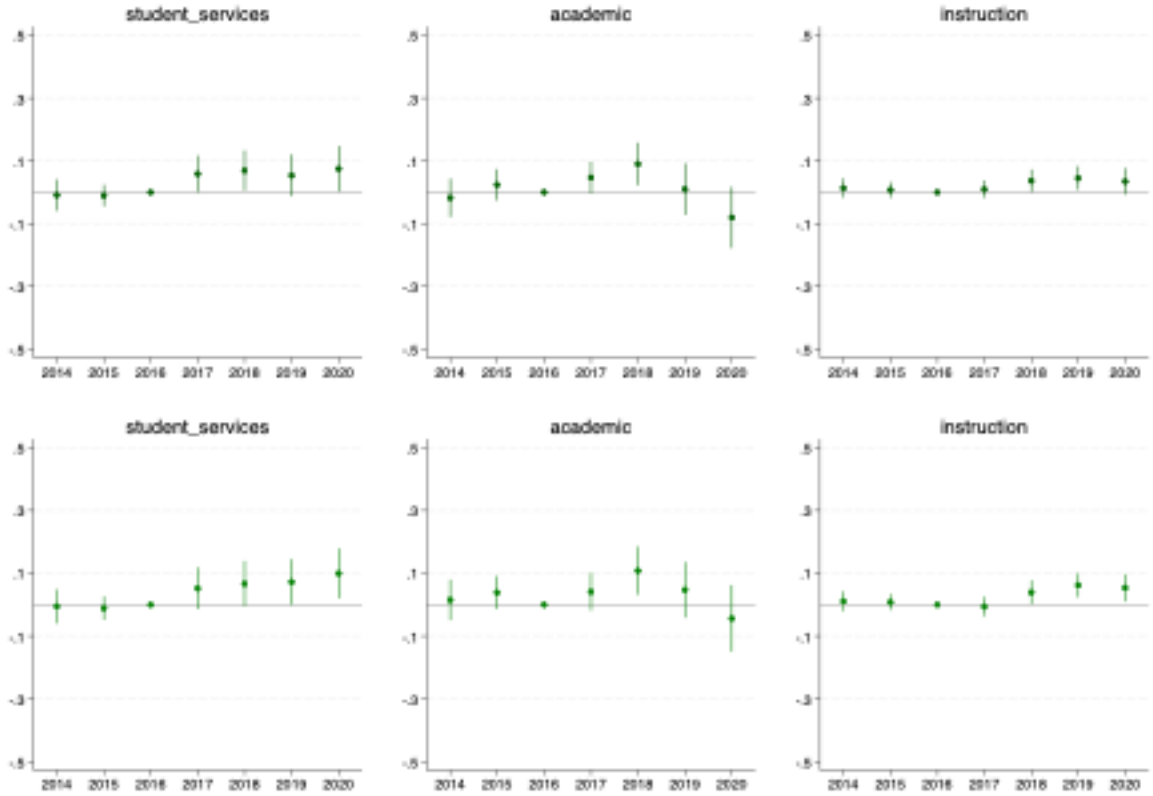


Note: Using U.S. Department of Education and IPEDS data, this plot displays coefficients from a time series model comparing federal grant revenue at public two-year MSIs funded in 2017 to other community colleges

in the same states. The first plot is from a model that combined both HSIs and PBIs. The second plot is from a model that only includes HSIs, and the third plot only includes PBIs. The federal grants variable has been divided by FTE enrollment and adjusted for inflation. The year before the treated group won their grants, 2016, is the omitted year.

Figure 7

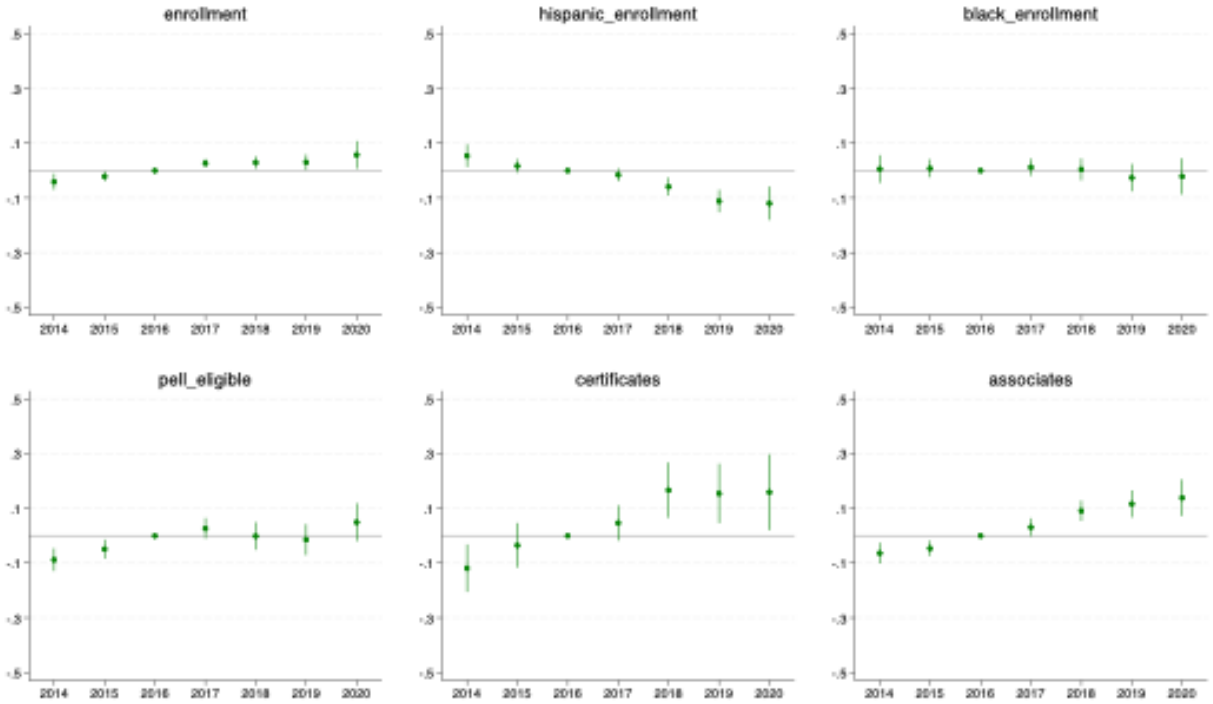
Spending outcomes for public two-year MSIs funded in 2017, compared to other community colleges in the same states for the combined sample of HSIs and PBIs (top) and just HSIs (bottom)



Note: Using U.S. Department of Education and IPEDS data, this plot displays coefficients from a time series model comparing spending at public two-year MSIs funded in 2017 to other community colleges in the same states. The plots in the top panel are from models that combined both HSIs and PBIs. The plots in the bottom panel are from models that only includes HSIs. The year before the treated group won their grants, 2016, is the omitted year. All outcome variables have been adjusted for inflation, divided by that year's FTE enrollment and log-transformed.

Figure 8

Enrollment and completion outcomes for public two-year MSIs funded in 2017, compared to those not funded for the sample of HSIs

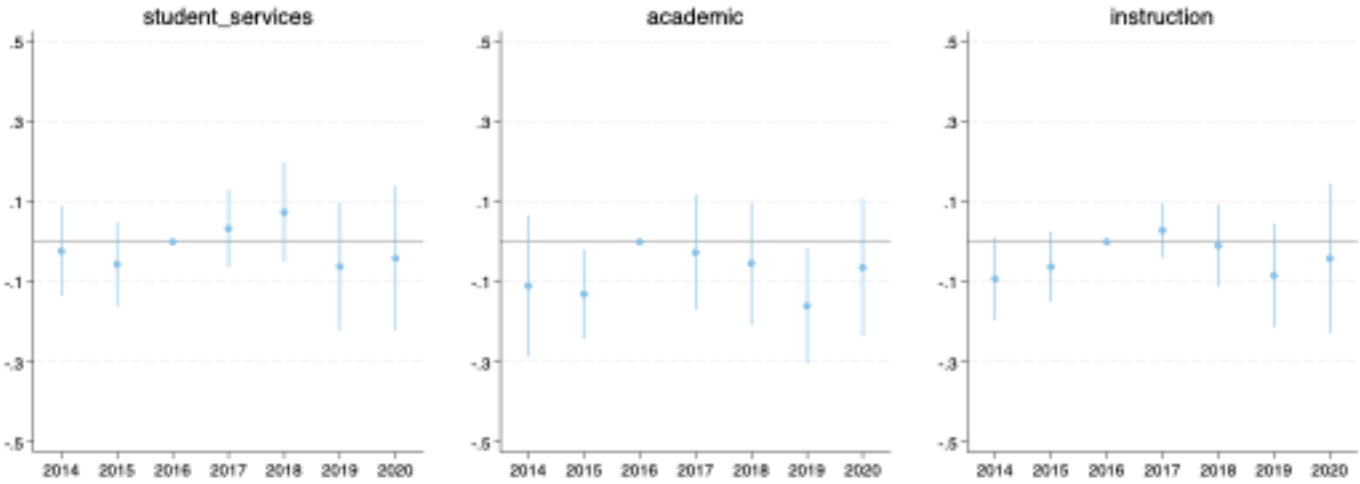


Note: Using U.S. Department of Education and IPEDS data, this plot displays coefficients from time series models comparing student outcomes at public two-year MSIs funded in 2017 to other community colleges in the same states. The year before the treated group won their grants, 2016, is the omitted year. All outcome variables have been log-transformed.

APPENDIX

Appendix A

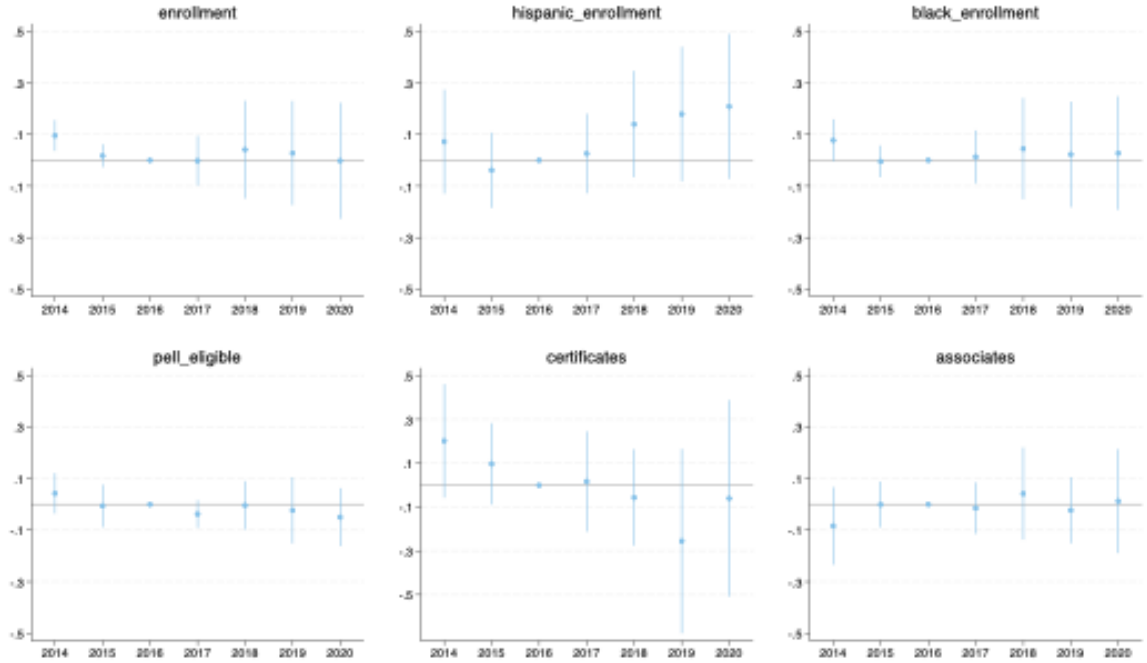
Spending outcomes for public two-year MSIs funded in 2017, compared to those not funded for the sample of PBIs



Note: Using U.S. Department of Education and IPEDS data, this plot displays coefficients from time series models comparing spending outcomes at public two-year MSIs funded in 2017 to those not funded within our sample years. The year before the treated group won their grants, 2016, is the omitted year. All outcome variables have been log-transformed.

Appendix B

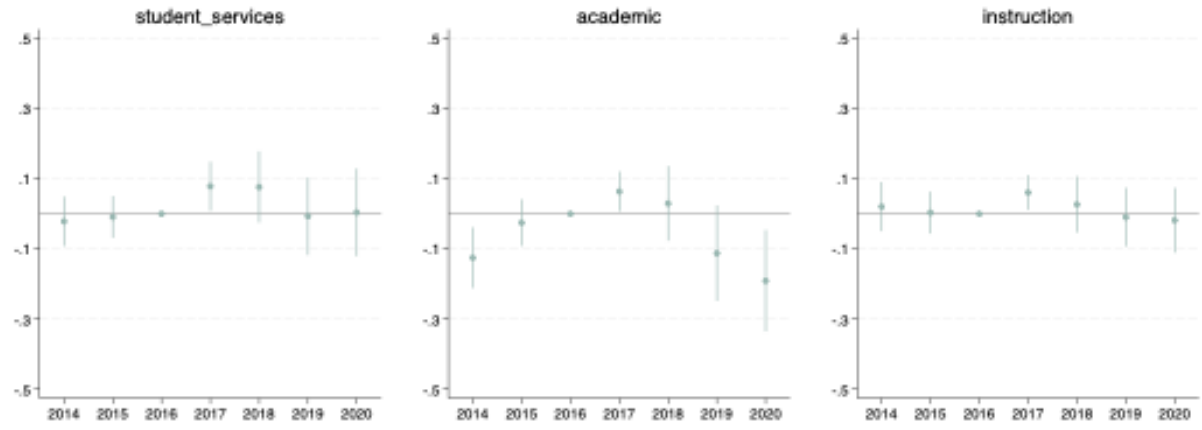
Enrollment and completion outcomes for public two-year MSIs funded in 2017, compared to those not funded for the sample of PBIs



Note: Using U.S. Department of Education and IPEDS data, this plot displays coefficients from time series models comparing student outcomes at public two-year MSIs funded in 2017 to those not funded within our sample years. The year before the treated group won their grants, 2016, is the omitted year. All outcome variables have been log-transformed.

Appendix C

Spending outcomes for public two-year MSIs funded in 2017, compared to other community colleges in the same states for the sample of PBIs

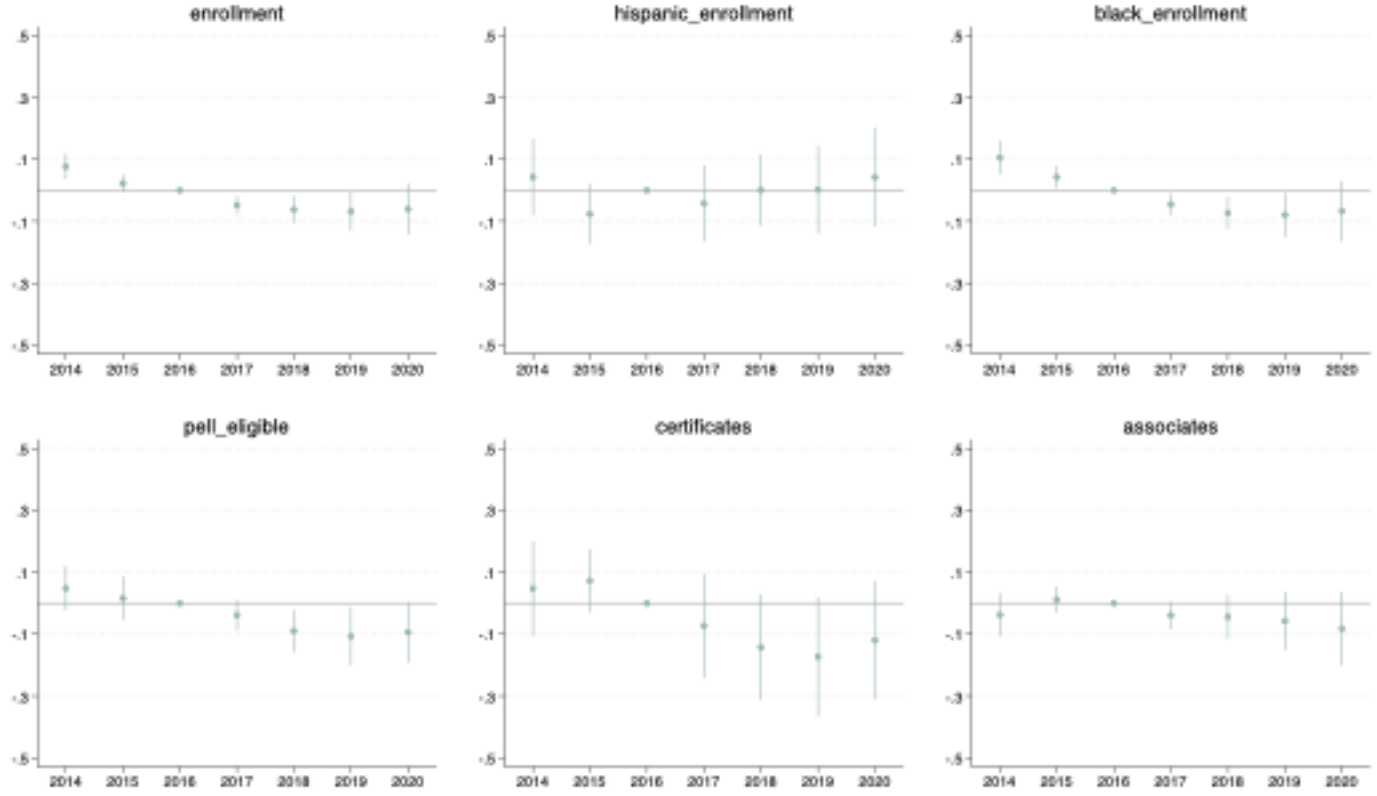


Note: Using U.S. Department of Education and IPEDS data, this plot displays coefficients from time series models comparing spending outcomes at public two-year MSIs funded in 2017 to other community colleges

in the same states. The year before the treated group won their grants, 2016, is the omitted year. All outcome variables have been log-transformed.

Appendix D

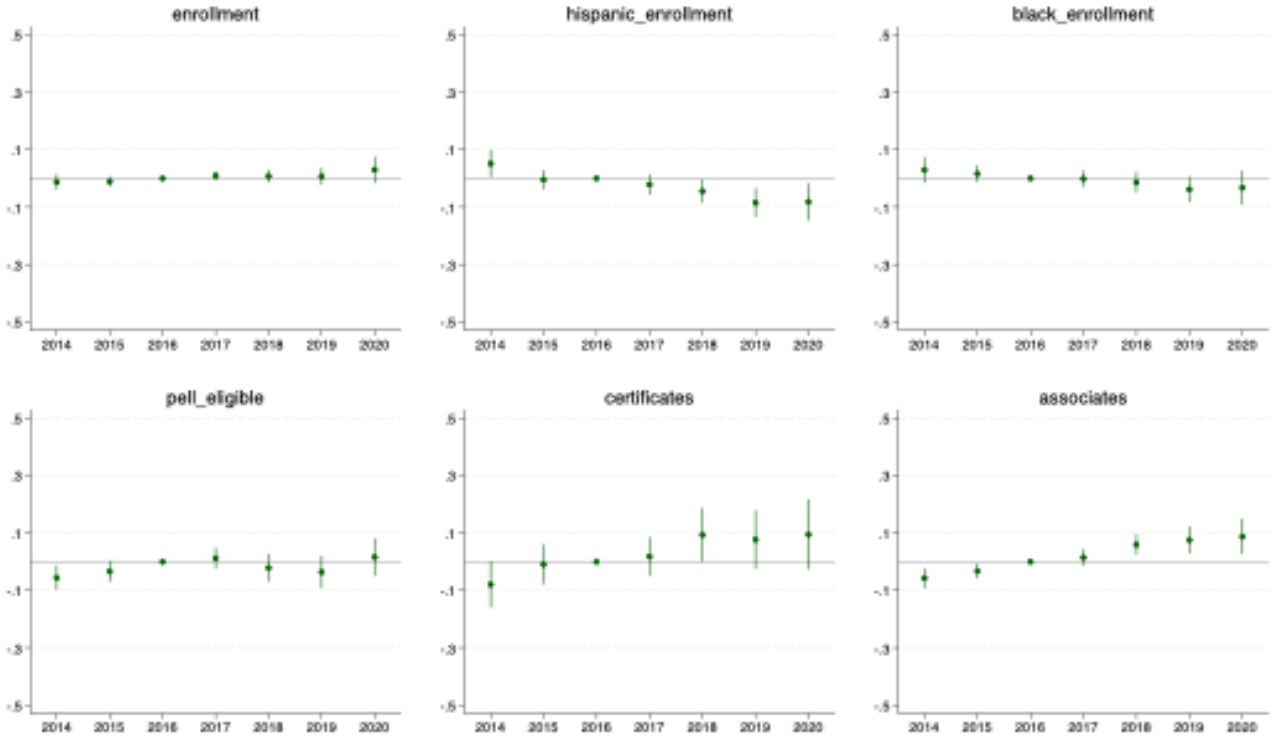
Enrollment and completion outcomes for public two-year MSIs funded in 2017, compared to other community colleges in the same states for the sample of PBIs



Note: Using U.S. Department of Education and IPEDS data, this plot displays coefficients from time series models comparing student outcomes at public two-year MSIs funded in 2017 to other community colleges in the same states. The year before the treated group won their grants, 2016, is the omitted year. All outcome variables have been log-transformed.

Appendix E

Enrollment and completion outcomes for public two-year MSIs funded in 2017, compared to those not funded for the combined sample of HSIs and PBIs



Note: Using U.S. Department of Education and IPEDS data, this plot displays coefficients from time series models comparing student outcomes at public two-year MSIs funded in 2017 to other community colleges in the same states. The year before the treated group won their grants, 2016, is the omitted year. All outcome variables have been log-transformed.