DOING MORE WITH LESS:

AN EXPLORATORY ANALYSIS OF HBCU INSTRUCTIONAL SPENDING RATIOS

AUTHORS:

Joy Gorham Hervey, Ed.D.
Michael Bradley, M.A.
Donald K. Murphy, CPA, FCPA, CFE, CGFM, CGMA

WPI
Wesley Peachtree Institute

Genesis Ed SOLUTIONS

WPG CPAs & Business Strategists

Introduction and Overview

In recent years, efforts to assess higher education institutions utilizing an economics lens have resulted in development of "education for the dollar" accountability metrics that purport to help consumers and policymakers compare institutions based on the percentage of revenue they devote to instructional spending.

To better understand the nuances, limitations, and outcomes of those metrics from an equity perspective, the Wesley Peachtree Institute (WPI) commissioned an exploratory analysis comparing the instructional spending ratios of historically Black colleges and universities (HBCUs) to those of non-HBCU institutions. Findings from this analysis indicate that, as a group, HBCUs invest a greater percentage of their revenue into instruction than comparable non-HBCU institutions. These findings hold true at the national, institutional, and student levels.

This white paper summarizes the background, methodology, and findings of our analysis, as well as its implications for higher education policy. We end by suggesting a research agenda with the capacity to improve upon economic accountability models by integrating data regarding instructional strategies shown to correlate with postsecondary success for vulnerable students, particularly first-generation college students, Black students, and other students of color.

WPI

Contact Us

(404) 874 0555

www.wpi-inc.org

The mission of Wesley Peachtree Institute is to perform research, study, and analysis that yields actionable information which we can share with institutions of higher education to help them achieve their missions.

Background

HBCUs have an outsized impact on positive education, career, and economic mobility outcomes for vulnerable students. As stated in a 2023 National Bureau of Economic Research working paper, HBCUs "punch significantly above their weight, especially considering their significant lack of resources."

Comprising less than 3% of the nation's postsecondary institutions, HBCUs enroll 10% of all Black students and produce almost 20% of all Black graduates as reported by UNCF. Black children are nearly three times as likely as white students to experience poverty, according to Columbia University Center on Poverty & Social Policy data. While poverty is typically associated with under-resourced K-12 schools, HBCUs provide pathways to postsecondary success, producing 85% of Black doctors, 80% of Black judges, 50% of Black lawyers, and 25% of Black graduates with STEM degrees. They accomplish this with limited financial resources: The Century Foundation found that average HBCU endowments range from approximately $7,000 to $25,000 per student at public and private institutions respectively, versus $25,000 to $185,000 at predominately white institutions (PWIs). On average the cost of attendance at an HBCU is 27% less than attending a comparable PWI, yet a higher percentage of HBCU students use loans to finance college and they borrow substantially greater amounts.

> **HBCUs "punch significantly above their weight."**
>
> National Bureau of Economic Research

Given the under-resourcing of HBCUs, combined with the distinctive needs of the vulnerable populations they serve, we set out to investigate how HBCUs compare to other institutions with respect to instructional spending measures. Taking as a starting point John J. Cheslock's 2019 methodology, which utilized publicly available data from IPEDS (Integrated Postsecondary Education Data System) to measure and compare institutions' instructional spending ratios, we designed a logical next-step analysis designed to answer the following research questions:

- **What percent of revenues collected for instruction do public and private HBCUs spend on instruction?**
- **How do these percentages compare with those for non-HBCU public institutions, non-HBCU private nonprofit institutions, and private for-profit institutions?**
- **What are the equity implications of the existing instructional spending accountability metrics and how might future research address any limitations that exist?**

Methodology

Using provisional 2021-2022 IPEDS data, the most recent data at the time of this analysis, we replicated Cheslock's calculations for 2,334 institutions enrolling 9,483,974 students. This represents all U.S. bachelor degree-granting institutions; community/technical colleges and non-undergraduate institutions were excluded from our sample. Using the same IPEDS variables and ratio formulas as Cheslock (see Table 1 at right) we compared findings for five categories of institutions: private HBCUs (*n*=40), public HBCUs (*n*=45), non-HBCU public institutions (*n*=709), non-HBCU private non-profit institutions (*n*=1,294), and for-profit institutions (*n*=246).*

We used four ratio calculation methods, as did Cheslock, to account for the limitations of using IPEDS variables alone.

- Method 1: Ratio = INSTR/CTFR
- Method 2: Ratio = INSTR/(CTFR+OSS)
- Method 3: Ratio = E&R/CTFR
- Method 4: Ratio = E&R/(CTFR+OSS)

Using Excel, we conducted a six-step analysis: this appendix contains tables summarizing our analysis results. All tables have four columns corresponding to the ratio calculation methods listed above. Appendix Table 1 contains ratios for the sample as a whole as well as medians at the institutional and student levels. Appendix Table 2 lists ratio percentiles to better assess the spread between values. In Appendix Table 3 are calculated ratios for each institution type (HBCU and non-HBCU) and control level (public, private non-profit, and for-profit). Appendix Table 4 lists the percentiles for each category. Appendix Table 5 records the correlation between the student services share of E&R expenditures and the percentage of full time and online-only students.

*IPEDS (Integrated Postsecondary Education Data System) is the official tool used by the U.S. Department of Education's National Center for Education Statistics to collect operations and outcomes data for all U.S. postsecondary educational institutions that benefit from federal student aid programs. For more detail and rationale regarding variables and calculations, see Cheslock's paper, referenced in our citations, below.

Table 1. Descriptions of Variables Used in Ratio Calculations

Variable	Description
INSTR	expenditures reported by institutions in IPEDS as "instruction"
E&R	instruction + student services + {education share * (academic support + institution support)} education share = (instruction + student services) / (instruction + student services +research + public service)
CTFR	net tuition and fees + discount and allowances applied to tuition and fees – institutional grants from unrestricted sources
OSS	education share * (local appropriations + state appropriations) education share = (instruction + student services) / (instruction + student services + research + public service)

Findings

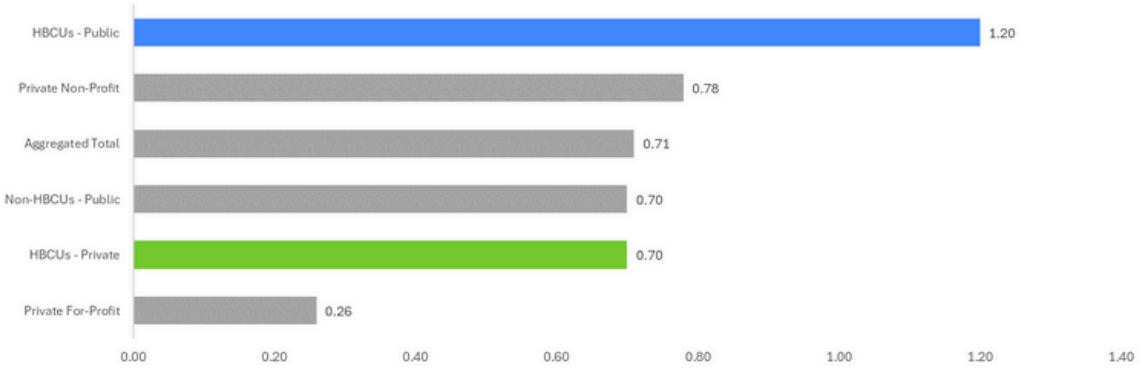
We found that HBCU instructional spending ratios for the 2021-2022 reporting year were, on the whole, higher than those of non-HBCU peer institutions. This finding held true for data at the national, institutional, and student levels. Below we elaborate upon select findings at each level, focusing the narrative on ratios calculated using both tuition and local and state tax revenues (CTFR+OSS) in the denominator, since those formulas incorporate a major source of revenue available for public institutions to invest in instruction.

National-Level Findings

Public HBCUs spend more on instruction, relative to revenue, than any other institution type.

Figure 1, below, ranks national-level ratios resulting from the INSTR/(CTFR+OSS) calculation, which utilizes the IPEDS instruction category alone in the numerator and incorporates both tuition and state and local tax revenues in the denominator. As this figure shows, public HBCUs as a group spend a far greater percentage of their revenue on instruction than do other categories of institutions. Of note, using this formula, the instructional spending ratio for private HBCUs (0.70) is nearly equivalent to the aggregated total for all institutions (0.71).

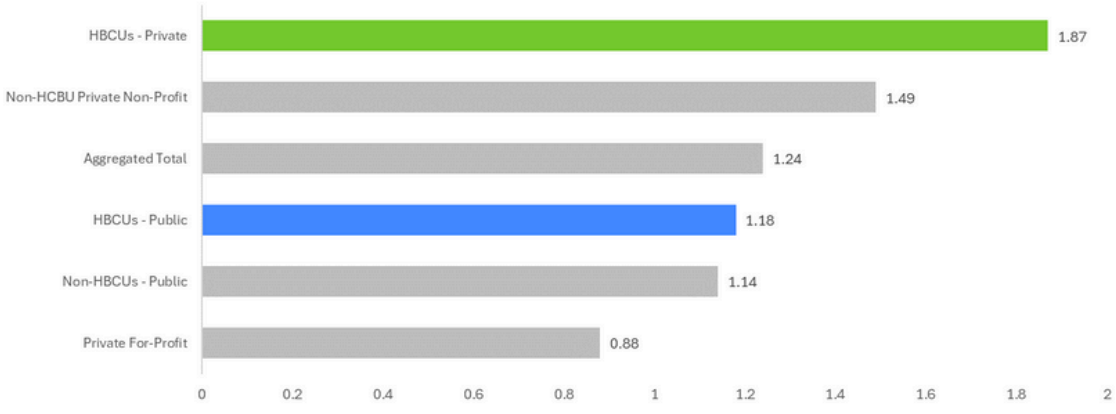
Figure 1. Instructional Spending to Revenue Ratio by Institution Type, National Level, INSTR / (CTFR+OSS)



HBCUs spend more on combined instructional and other education-related expenses than the corresponding non-HBCU institutions.

Figure 2, below, ranks national-level ratios resulting from the E&R/(CTFR+OSS) calculation, which includes all education-related spending in the numerator and incorporates both tuition and state and local tax revenues in the denominator. Assessed using this calculation, private non-profit HBCUs as a group spend more of their revenue on education-related expenses than do other institution types.

Figure 2. Instruction + Education Related Spending to Revenue Ratio by Institution Type, National Level, E&R/(CTFR+OSS)



When basing calculations on instructional spending alone, HBCUs have a higher "floor" for their instructional spending-to-revenue ratios compared to other institutions of other types.

Figure 3, below, visualizes the median (50th percentile), 25th to 75th percentile range, and lower and upper limits (1st and 99th percentiles, respectively) of instructional ratios at the institutional level. The lowest institution-level instructional spending ratios for public and private HBCUs are 0.32 and 0.27, respectively, whereas the first percentile ratio for non-HBCU public and private non-profit institutions are 0.07 and 0.0, respectively. It is also of note that, while most categories' institution-level medians are similar, ranging from 0.54 to 0.61, the median institutional ratio among for-profit institutions is far lower, only 30 cents on the dollar.

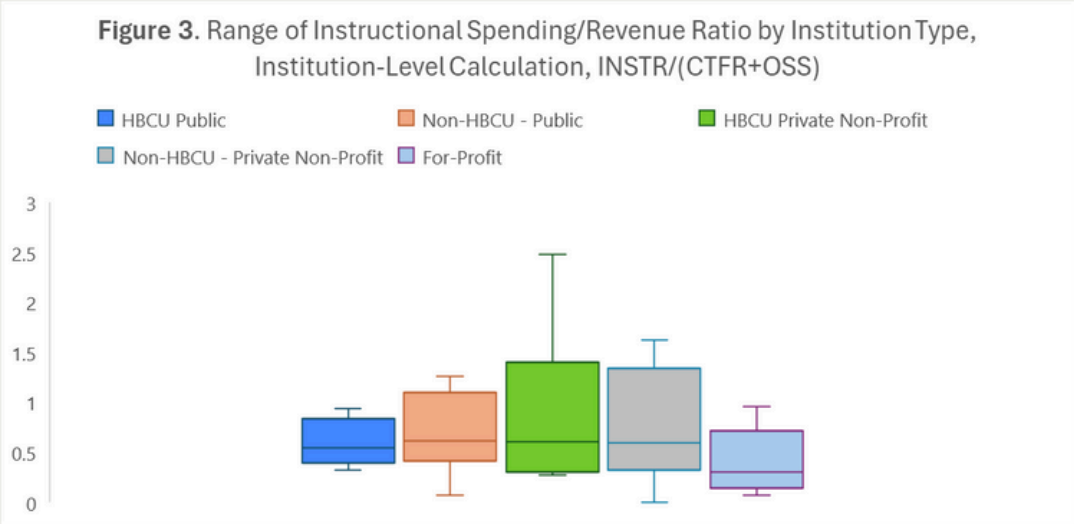


Figure 3. Range of Instructional Spending/Revenue Ratio by Institution Type, Institution-Level Calculation, INSTR/(CTFR+OSS)

When education-related expenses from other IPEDS categories are factored into instructional spending, public and private HBCUs have higher instructional spending ratios than their non-HBCU counterparts.

Figure 4, below, ranks institutional-level median ratios resulting from the E&R/(CTFR+OSS) calculation, which, again, includes all education-related spending in the numerator and incorporates both tuition and state and local tax revenues in the denominator. Assessed using this calculation, the median private non-profit HBCU spends more of its revenue on education-related expenses than does the median non-HBCU private non-profit institution. Similarly, the median institution-level ratio for public HBCUs is higher than that for other public institutions.

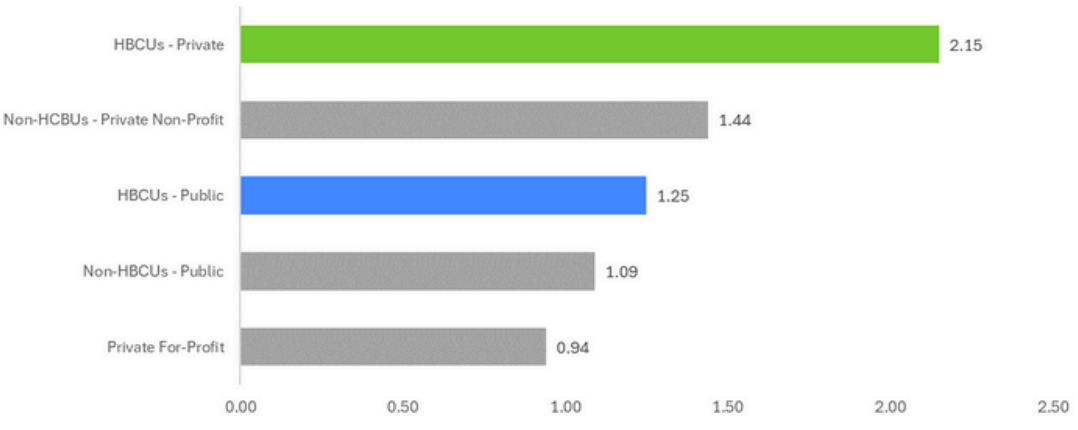


Figure 4. Median Instruction + Education Related Spending to Revenue Ratio by Institution Type, Institution-Level Calculation, E&R/(CTFR+OSS)

The median student at a public HBCU has a greater proportion of their school's tuition revenues spent on their instruction.

As shown in Figure 5, below, private non-profit HBCUs and non-HBCUs spend a nearly equivalent proportion of their tuition revenues on the instruction of the median student. The figure also shows that the median student at a public HBCU experiences an instructional spending ratio that is double that experienced by the median student at a private non-profit institution and also significantly higher than experienced by the median student at a non-HBCU public institution.

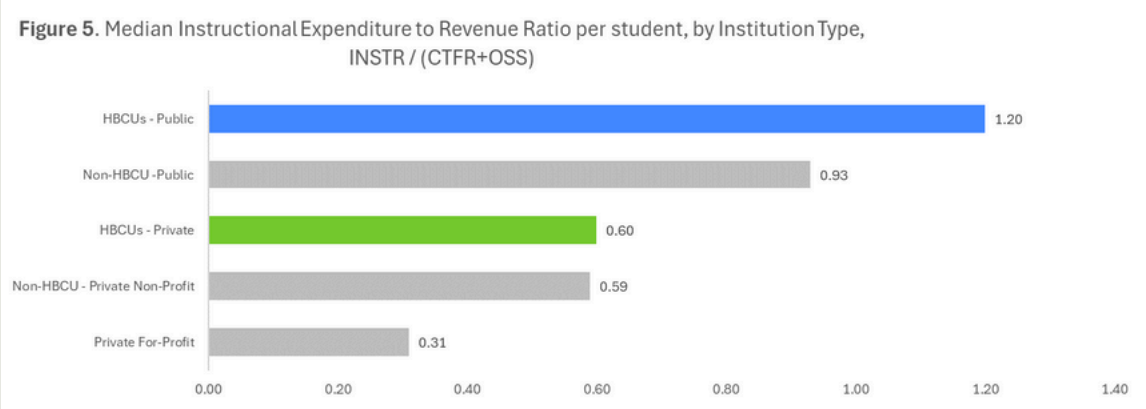
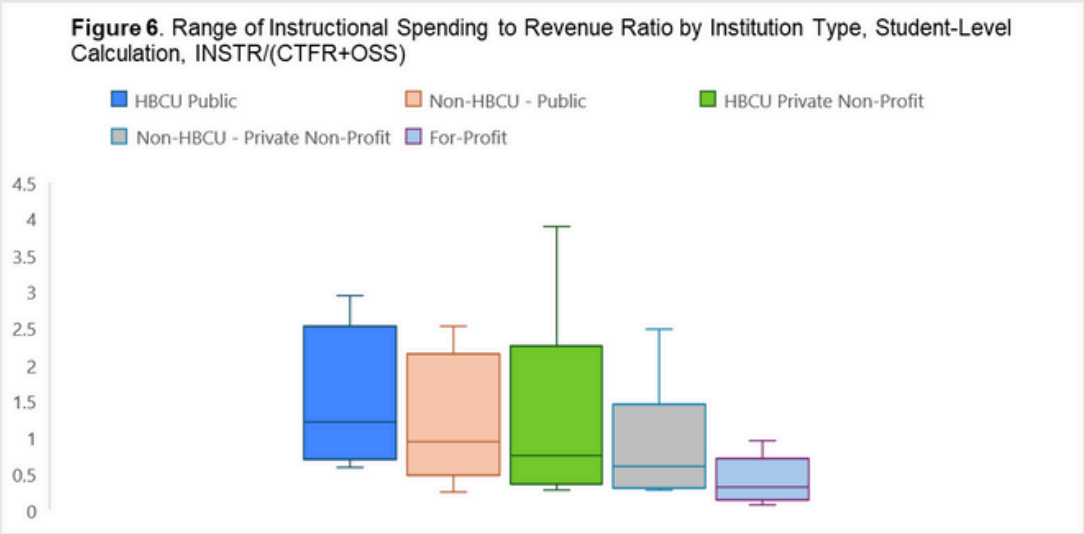


Figure 6, below, visualizes this finding in a different way, making it apparent that public and private non-profit HBCUs have higher student-level instructional spending ratios compared to their peer non-HBCU institutions. The median lines in this figure also portray that public HBCUs have the highest median student-level instructional spending ratio of any institution type.



Student-Level Findings

At the student level, HBCUs have the largest ratios of instructional and education-related spending relative to revenue.

As shown in Figure 7, below, when education-related expenditures are added to the IPEDS instruction category, private and public HBCUs are the two institution types that rank highest when it comes to the instructional spending to revenue ratio experienced by the median student.

Figure 7. Median Instructional and Education Related Expenditure to Revenue Ratio per student, by Institution Type, Student-Level Calculation, E&R/(CTFR+OSS)

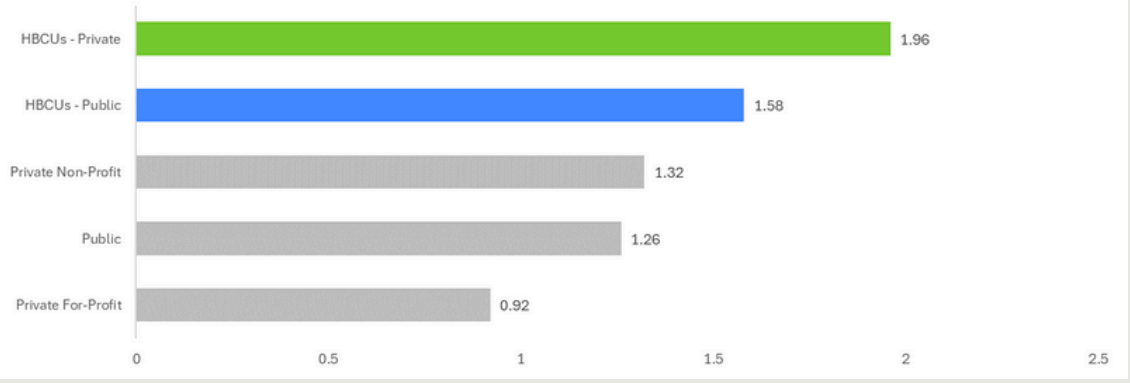
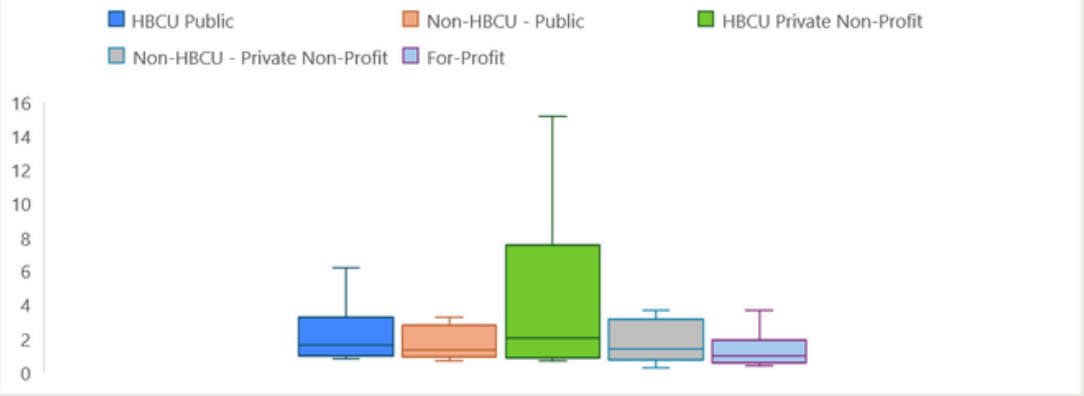


Figure 8, below, visualizes this finding in a different way, also showing that the student-level median ratios for HBCU institutions outrank those calculated for other institution types.

Figure 8. Range of Instructional + Education Related Spending/Revenue Ratio by Institution Type, Student-Level Calculation, E+R/(CTFR+OSS)



Full-time and online-only enrollment are correlated with the share of education-related spending that is attributable to student services.

As shown in Table 2, below, full-time enrollment (FTE) is positively correlated with education-related spending related to student services. Online-only enrollment, in most cases, is negatively correlated with education-related spending related to student services, notable exceptions being for-profit institutions and nonprofit institutions that presumably enroll significant numbers of online students. As Cheslock pointed out, this may indicate that marketing and recruitment efforts factor into the E&R numerator in an outsized way, which may falsely inflate instructional spending ratios for larger institutions and those with robust online-only enrollment.

Table 2. Correlation Between FTE, Online-Only Enrollment, and Education and Related (E&R) Expenditures That Are Due To Student Services

Institutions	# of Schools	Correlations	
		FTE Enrollment	% Exclusively Online
HBCUs - Public	40	0.296	-0.249
HBCUs - Private	45	0.880	-0.180
Non-HBCUs - Public	709	0.779	-0.211
Non-HBCUs - Private Non-Profit	1294	0.680	0.008
Private For-Profit	246	0.819	0.090

Interpreting Findings

The notes below will help readers responsibly interpret and contextualize our findings.

First, instructional spending ratios greater than one, as Cheslock pointed out, pose an intuitive quandary as to how institutions can spend more on instruction than they receive in revenue. There are multiple potential explanations for this phenomenon, including reporting error, issues with the formulas, or additional sources of revenue not accounted for in Cheslock and Hall's formula, such as endowments or auxiliary services. It is notable that, when calculations include only the INSTR variable in the numerator, the institution-level medians for all categories are less than one. This may indicate that there are a few outlier institutions that inflate the ratio calculations at the national level. The field of higher education finance can benefit from further investigation to understand this issue.

Second, due to the differences between group sample sizes, it was not possible for us to assess whether differences between categories are statistically significant.

Finally, these findings are limited to the reporting period studied. In this case, findings may reflect COVID-era realities such as instructional disruptions, pivots to online learning, and targeted COVID-related Higher Education Emergency Relief Fund (HEERF) grants to institutions. Analysis and comparison of these findings with pre- and post-COVID data will assist with interpretation.

Recommendations

The findings of this analysis suggest several recommendations for consideration by policymakers and researchers. We detail these recommendations below.

Invest in HBCUs.

HBCUs are doing the heavy lifting when it comes to enhancing economic opportunity and mobility, and this analysis indicates that they are doing so while maintaining higher instructional spending ratios than their peer institutions. This reality justifies increased levels of public and private support, particularly in the face of federal data that document states' underfunding of Black land grant institutions by nearly $13 billion from 1987 to 2020. Instructional spending data should be used as part of a strategy to craft and assess the effectiveness of a robust policy agenda to address the historical underfunding of HBCUs.

Refine IPEDS finance survey variables to assist with accountability.

Follow-up studies would do well to further refine IPEDS finance survey variables and collect more detailed spending data from institutions in order to drill down to expenditures that directly impact instruction. This appendix document outlines our proposed approach, which segments existing data categories to separate out marketing, recruiting, and other expenditures that may artificially inflate reported instructional spending, particularly among for-profit institutions and those with large percentages of online-only students.

When creating decision making tools for consumers, distinguish between public and private institutions, and combine financial accountability with other measures.

The impetus for creating analyses like this one, as well as the instructional spending calculators that use these data, is admirable - to provide a greater level of insight for consumers making hugely impactful financial decisions around higher education. Potential dangers of this trend, however, include misinterpretation of data by consumers and manipulation of data reporting by institutions in an effort to achieve higher ratios. To mitigate these risks, we propose that accountability tools for the public include separate rankings for public and private institutions, given the impact of tax revenue on ratios for public institutions. We also propose that accountability tools combine instructional spending ratios with other indicators such as student outcomes and also rank institutions within Carnegie Classification categories to enable consumers to more effectively compare institutions.

Track and report ratios annually to analyze trends over time as well as the influence of higher education policies and institutional practices.

As mentioned above, calculating instructional spending ratios before, during, and after COVID could provide a test case to better understand the influence of public investments on instructional expenditures. This is just one example of how consistently tracking the same data over time can provide useful information for policymakers and higher education leaders.

Evaluate the impact of strategies, not just structures.

When seeking to measure "education-for-the-dollar," it is essential to define what is meant by "education." Given the data that are readily available, i.e., IPEDS data, it is relatively simple to measure what percentage of institutions' tuition dollars go toward instructional spending. It is harder to measure what students "get" for what they pay, both during their college experience and after (e.g., graduation, employment, and job placement rates). And it is nearly impossible, given existing research, to measure how well institutions carry out what is ostensibly their key function, teaching and learning.

Structural analyses of "education for the dollar" measure operational efficiency. It is possible that how institutions utilize their instructional dollars is more impactful than efficiency when it comes to student outcomes. Therefore, we propose developing and investing in a research agenda focused on defining inputs and outputs in ways that help tell the story of how HBCUs and other institutions facilitate upward socioeconomic mobility for vulnerable students, particularly first-generation college students, Black students, and other students of color.

Using this lens, input variables may go beyond expenditure amounts to include strategies institutions are using effectively support vulnerable students such as proactive advising, dedicated spaces and programming, behavioral health supports, summer bridge programs and structured first-year experiences, elimination of fees, courses with labs and projects, faculty to student ratios, and culturally responsive curricula and teaching practices.

Conclusion

This white paper presented data from a quantitative analysis of 2021-2022 instructional spending compared to tuition revenues for all four-year-degree granting institutions in the U.S., a total of 2,334 institutions enrolling 9,483,974 students. We found that HBCU instructional spending ratios were, on the whole, higher than those of non-HBCU peer institutions. This finding held true for data at the national, institutional, and student levels. This analysis suggests that right-sizing public and private investment in HBCUs will pay dividends to consumers in the form of instructional spending, impacting the nation's most vulnerable students by resourcing the institutions that best serve their needs.

References

About HBCUs. (n.d.) Thurgood Marshall College Fund. https://www.tmcf.org/about-us/member-schools/about-hbcus/

Bryan-Gooden, J., Hester, M., & Peoples, L. Q. (2019). Culturally responsive curriculum scorecard. New York: Metropolitan Center for Research on Equity and the Transformation of Schools, New York University. https://steinhardt.nyu.edu/sites/default/files/2020-12/CRE%20Scorecard%20Revised%20Aug%202020.pdf

Charles, R., Collyer, S., & Wimer, C. (2022, March 10). The role of government transfers in the Black-White child poverty gap. New York: Center on Poverty and Social Policy at Columbia University. https://www.povertycenter.columbia.edu/news-internal/2022/black-white-child-poverty-gap#:~:text=Black%20children%20are%20nearly%20three,government%20transfers%20and%20tax%20credits.

Cheslock, J. J. (2019, February 28). Examining instructional spending for accountability and consumer information purposes. The Century Foundation. https://tcf.org/content/report/examining-instructional-spending-accountability-consumer-information-purposes/

Hall, S. (2022, January 14). How far does your tuition dollar go? The Century Foundation. https://tcf.org/content/commentary/how-far-does-your-tuition-dollar-go/

Investing in better futures for students and for all of us: Fact sheet. (n.d.) UNCF. https://uncf.org/wp-content/uploads/2023-Fact-Sheet-Myriad_08-23-1.pdf

Knott, K. (2023, September 20). States underfunded historically Black land grants by $13 billion over 3 decades. Inside Higher Ed. https://www.insidehighered.com/news/government/2023/09/20/states-underfunded-black-land-grants-13b-over-30-years#:~:text=Over%20all%2C%2016%20of%20the,data%20from%201987%20to%202020.

Price, G., & Viceisza, A. (2023, April). What can historically Black colleges and universities teach about improving higher education outcomes for Black students? Cambridge: National Bureau of Economic Research. https://www.nber.org/system/files/working_papers/w31131/w31131.pdf

Saunders, K. M., Williams, K. L., & Smith, C. L. (2016). Fewer resources, more debt: Loan debt burdens students at historically Black colleges & universities. Washington, DC: UNCF Frederick D. Patterson Research Institute. https://uncf.org/wp-content/uploads/reports/FINAL_HBCU_Loan_Debt_Burden_Report.pdf

Size & setting classification. (n.d.). Carnegie Classification of Institutions of Higher Education. https://carnegieclassifications.acenet.edu/carnegie-classification/classification-methodology/size-setting-classification/

Smith, D. A. (2021, September 14). Achieving financial equity and justice for HBCUs. The Century Foundation. https://tcf.org/content/report/achieving-financial-equity-justice-hbcus/

University of Georgia Terry College of Business. (n.d.). HBCUs make America strong: The positive economic impact of historically Black colleges and universities. Washington: UNCF. https://uncf.org/wp-content/uploads/HBCU_Consumer_Brochure_FINAL_APPROVED.pdf?_ga=2.197111532.1982042257.1717085852-1660768353.1717085851

Who is a first-generation student? (n.d.). https://www.chronicle.com/featured/student-success/student-centric-institution/who-is-a-first-generation-student