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Minority Serving Institutions: A Data-Driven Student Landscape in the Outcomes-Based Funding Universe

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Abstract

Minority Serving Institutions (MSIs) emerged in response to a history of racial inequity and social injustice due to racial and ethnic minorities' lack of access to Predominately White Institutions (PWIs). Enrolling 20% of the nation's college students, MSIs are an integral part of U.S. higher education. The purpose of this paper is to highlight the contributions that MSIs are making to postsecondary education, specifically contributions related to performance with men of color; teacher education; science, technology, engineering, and mathematics (STEM) education; and outcomes measures within two-year MSIs. We use descriptive statistics from the National Center for Educational Statistics and the National Science Foundation to call for deep consideration of the unique mission MSIs serve, especially with regard to educating low-income students of color within the universe of outcomes and performance-based evaluation. We conclude with recommendations and implications for policy.

Keywords: Minority Serving Institutions, outcomes, accountability, performance

Minority Serving Institutions (MSIs) emerged in response to a history of racial inequity and social injustice due to racial and ethnic minorities' lack of access to Predominantly White Institutions (PWIs), as well as significant demographic shifts over the past 40 years (Cunningham, Park, & Engle, 2014; Nuñez, Hurtado, & Calderón Galdeano, 2015). Today, even more significant demographic changes in the country have created clusters of racial and ethnic minorities throughout the nation and within college and university settings. Representing 20% of the nation's college students, MSIs are now an integral part of U.S. higher education (Conrad & Gasman, 2015). Since the establishment of Cheyney University, a historically Black institution, in 1837, MSIs have represented a key point of access for those populations that have been legally and socially excluded from PWIs. In this article, we detail the ways in which widened access to opportunity in higher education has positively influenced areas that are considered vital at

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both the state and federal levels (Cunningham et al., 2014; Orfield, 2014). Rather than asking if and why MSIs matter in education and to the workforce, this article represents a response to how they matter. In the following sections, we offer an overview of the current literature focused on achievements in science, technology, engineering, and mathematics (STEM) education, teacher preparation, and outcome measures (e.g., graduation rates) within the subset of two-year MSIs. Our overview of these areas connects to current trends calling for the diversification of the teaching profession, the need for graduates with competencies in STEM, and the value of attaining credentials offered by two-year colleges.

Literature Review

MSIs consist of, but are not limited to, Tribal Colleges and Universities (TCUs), Hispanic Serving Institutions (HSIs), Asian American and Native American Pacific Islander Serving Institutions (AANAPISIs), and Historically Black Colleges and Universities (HBCUs) (Cunningham et al., 2014; Merisotis & O'Brien, 1998; Teranishi, 2010). There are also numerous emerging MSI types, including Native American Serving Nontribal Institutions (NASNTIs), Predominantly Black Institutions (PBIs), and Alaskan Native and Native Hawaiian Serving Institutions (ANNHSIs) (Cunningham et al., 2014; Penn Center for Minority Serving Institutions, 2016; Rochet, 2015). These institutions have carved out a unique niche: serving the needs of low-income and underrepresented students of color. They offer diverse faculties and staffs, provide environments that greatly enhance student learning and develop leadership skills, offer learning spaces with same-race role models, address deficiencies in K–12 preparation of students, and ready students to thrive in the workforce and in graduate and professional education (Conrad & Gasman, 2015; Cunningham et al., 2014; Lundy-Wagner, Vultaggio, & Gasman, 2013; Merisotis & O'Brien, 1998; Nuñez et al., 2015).

MSIs enroll a substantial share of racial- and ethnic-minority students, many of whom might not otherwise attend college due to systemic discrimination. They offer educational opportunities that feature extensive student support services, effective developmental education, a family-like environment, and considerable knowledge pertaining specifically to the needs of low-income, first-generation students (Conrad & Gasman, 2015; Cunningham et al., 2014; Merisotis & O'Brien, 1998; Nuñez et al., 2015). For this reason, the success of these institutions is essential for reaching our nation's higher education and workforce goals. MSIs play a crucial role within the nation's economy, especially with respect to elevating the workforce prospects of disadvantaged populations and reducing the underrepresentation of minorities in careers that require post-baccalaureate education and training (Conrad & Gasman, 2015; Cunningham et al., 2014; Freeman & Gasman, 2014; Gasman & Nguyen, 2014; Merisotis & O'Brien, 1998; Nuñez et al., 2015).

Despite these strengths, MSIs face considerable challenges. These institutions have tight operating budgets that allow them little flexibility in terms of faculty hiring, curriculum, and facilities enhancement (Cunningham et al., 2014; Merisotis, & O'Brien, 1998). Because of strict financial constraints, they often find it difficult to secure leaders who can effectively steward the institutions toward sustainability and long-term success. Many MSIs have higher presidential turnovers than PWIs; MSI presidents average a six-

year term, whereas PWI presidents average an eight-year term (American Council on Education, 2015). MSIs also have, on average, lower graduation and retention rates than PWIs, due in part to their service of large numbers of first-generation, low-income, and underprepared students (Conrad & Gasman, 2015; Cunningham et al., 2014; Freeman & Gasman, 2014; Gasman & Nguyen, 2014; Merisotis & O'Brien, 1998; Nuñez et al., 2015). In essence, MSIs are asked to overcome larger barriers by supporting populations that are disproportionately disadvantaged using substantially fewer resources than their comparable PWIs (Gasman, 2007).

Given MSIs' history of underfunding and vulnerable financial situations, these institutions face new challenges with emerging outcomes-based funding models at the state level (Conrad & Gasman, 2015; Cunningham et al., 2014; Gasman, 2007). Moreover, the federal government's focus on ranking colleges and universities through systems like the College Scorecard, a repository of earning outcomes for an institution's graduates, has the potential to hurt MSIs if their contributions and service to low-income students of color are not fully understood (Cunningham et al., 2014; Gasman & Nguyen, 2014). Current trends in performance-based funding schemes rely on the data produced from national datasets (e.g., National Center for Education Statistics; NCES) that use constraining definitions for their variables. Until 2016, NCES counted only first-time degree seekers in their calculations for graduation rates. Metrics such as graduation rates are a common variable used in performance-based funding to state-affiliated colleges and universities (Jones et al., 2017*)*. However, due to the distinct profile of students attending MSIs, many of whom transfer between or leave and re-enter institutions, such metrics lead to unfair judgments of these institutions' success.

Of note, we differentiate between MSIs that were created with the express purpose of educating specific racial and ethnic groups and those that resulted from recent demographic shifts. Both HBCUs and TCUs were created to educate Black people and Native Americans, respectively. At their core, they have a mission to empower and uplift their students. Their curricula and corresponding co-curricular programs are typically aimed at providing culturally relevant learning experiences (Brayboy, Fann, Castagno, & Solyom, 2012; Cunningham et al., 2014; Gasman, 2007; Gasman & McMickens, 2010). HSIs and AANAPISIs are different in their constitutions. Apart from three HSIs that were specifically founded to educate Hispanics, most HSIs earned this designation as the result of demographic shifts that led to higher concentrations of Hispanic students enrolling in existing post-secondary schools. There is also great diversity within HSIs in terms of race, ethnicity, class, religion, sexuality, etc., with some boasting student populations that are 98% Hispanic and others hovering near the 25% threshold that is required to earn HSI designation by federal standards (Conrad & Gasman, 2015; Cunningham et al., 2014; Gasman, 2007; Nuñez et al., 2015). However, many HSIs well exceed the federal requirements, with 43% (118) of all HSIs reporting Hispanic enrollment of 50% or greater. To earn AANAPISI [2] status, an institution must

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[2] On average, students of Asian descent perform better in higher education than all other racial groups. Research (e.g., Teranishi, 2010) indicates, however, that the broad pan-ethnic term *Asian* is misleading in that it blurs the many differences that exist within Asian communities. For instance, without disaggregated data, few would know that the Hmong and Cambodian communities have college attainment rates well below the national average. Until federal agencies, such as NCES, can provide that level of detail, it will be challenging

demonstrate that at least 10% of enrolled students are Asian American or Pacific Islander (AAPIs). Due to their enrollment profiles, 55 MSIs are eligible for both HSI and AANAPISI status.[3]

Many HSIs and AANAPISIs are embracing their federal designation, providing services focused on Latinos and AAPIs. One such example is California State University Fresno's Full Circle Project, which is focused on increasing retention for AAPI students through programming directed by the school's Ethnic Studies and Asian American Studies programs. However, there are other institutions that do very little to uphold their designation and it is important to continue to hold these institutions accountable for their status as MSIs (Calderón Galdeano & Santiago, 2014; Cunningham et al., 2014; Nuñez et al., 2015; Teranishi, 2010). Some institutions may be encouraged to better serve their minority populations if the Office of Postsecondary Education (OPE), which manages the funding offered to institutions that are eligible for MSI designations, implemented a systematic way of reviewing the success of the grants awarded. With the exception of TCUs and HBCUs (whose numbers of eligible institutions remain static), all institutions deemed eligible by the OPE for MSI-specific funding (through Title III and Title V[4]) apply for competitive grants administered by OPE. Many of these grants provide up to five years of funding for these institutions.

Often, those writing about MSIs do not include data detailing the contributions of MSIs to various parts of society. Instead, they focus on overarching platitudes (Gasman, 2007). With this paper, we aim to contribute a data-driven perspective on the MSI landscape by providing a primer on the contributions of MSIs, revealing the ways in which MSIs are performing in general and across specific areas that have been deemed important at both the state and federal level. In so doing, the primer sheds light on the kinds of metrics that policymakers, OPE, and other funders may want to consider when judging the success of MSIs, particularly in response to policymakers' concerns about MSIs' performance with men of color, in teacher and STEM education, and within the two-year community college environment (Orfield, 2014). This primer provides evidence that MSIs' contributions in these areas have considerable value.

We use descriptive statistics from the Integrated Postsecondary Education Data System (IPEDS) and National Science Foundation (NSF) to illustrate MSIs' contributions and growing importance to society. We address the relationship between MSIs and the outcomes of men of color, the shortage of racial minorities in teacher education and STEM education, and their growing presence within the community college sector. Data

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to make sense of how AANAPISIs serve underrepresented students.

[3] The challenge with dual designation—in this case, institutions that are considered HSIs and AANAPISIs—stems from the question of analysis and the manner in which they should be treated in study designs. We suggest looking more closely at each of these institution types to better determine their tendency in serving either Hispanic or Asian students.

[4] Title III helps eligible colleges and universities "to become self-sufficient and expand their capacity to serve low-income students by providing funds to improve and strengthen the academic quality, institutional management, and fiscal stability of eligible institutions" (U.S. Department of Education, n.d.-b, para. 1). Title V is the Developing Hispanic-Serving Institutions (DHSI) Program and "provides grants to assist HSIs to expand educational opportunities for, and improve the attainment of, Hispanic students. These grants also enable HSIs to expand and enhance their academic offerings, program quality, and institutional stability" (U.S. Department of Education, n.d.-a, para. 1).

presented also add to arguments that call for deep consideration of the unique mission that MSIs serve, especially with regard to educating low-income students of color within the universe of outcomes and performance-based evaluation.

Method

We began this analytic process by using the database on MSIs provided by the Penn Center for Minority Serving Institutions (2016), as well as the more recent Eligibility Matrix for Minority Serving Institutions grants provided by OPE (2016), to construct a universe of MSIs in the United States. We used these institutional listings to create clusters of organizations—TCUs, HBCUs, AANAPISIs, and HSIs. (To view this universe with the cluster designations, see https://www2.gse.upenn.edu/cmsi/content/msi-directory.) Using these cluster designations as the primary unit of analysis, we disaggregated publicly available data on postsecondary education with particular attention to three areas: teacher education, STEM education, and two-year institutions. Through this analysis, we examined the contributions that MSIs have made as reservoirs of students of color in these three areas, with attention to enrollment and completion data. Data were collected from IPEDS and NSF's Scientists and Engineers Data System. Given the comprehensive and descriptive nature of these statistics, we offer these key educational areas as illustrations of the importance of centering MSIs as a unit of analysis in research. Furthermore, this overview provides a pathway for future researchers who are interested in providing alternative points of departure for metrics used to diagnose institutions' outcomes.

Findings and Discussion

Minority Serving Institutions—By the Numbers

MSIs account for 14% of all postsecondary institutions in the nation (OPE, 2016). This point is critical if we want to understand the pivotal role these institutions play in educating people of color in the United States, given that they consistently enroll and graduate a disproportionate number of students of color. As of 2016, 481 institutions were eligible for one of the four primary designations as MSIs: 34 TCUs, 105 HBCUs, 301 HSIs, and 68 AANAPISIs.[5]

Given that over 50% of the students across all of these institutions receive Pell Grants and tuition is, on average, about half as much as that of comparable PWIs, MSIs are the most affordable avenue for students of color hailing from under-resourced backgrounds (Cunningham et al., 2014). As we document below, some of the lower costs can be attributed to the significant proportion of MSIs that are two-year colleges, whereas others are linked to MSIs having less developed infrastructure and, therefore, fewer expenses.

Uplifting Men of Color

President Obama and his administration have focused on uplifting and drawing

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[5] Due to their demographics, a handful of institutions are eligible for both HSI and AANAPISI designation, thus accounting for the discrepancy between the total number of MSIs and the disaggregated number of institutions within each type of MSI designation.

attention to the lives of men of color through the My Brother's Keeper initiative. Unfortunately, aside from a single line, MSIs were summarily left out from the report produced by the initiative's task force (U.S. Department of Education, 2014). Leaving MSIs out of national discussions—save for a few HBCUs—is a grave mistake, as a large percentage of the gains of men of color are found in MSIs. Without attention to these important institutions, it is challenging to move men of color forward in greater numbers.

The role that MSIs play in educating men of color must be considered when both the state and federal governments are evaluating these institutions' contributions. According to the U.S. Department of Education (2014), data indicate that boys and men of color are disproportionately at risk of not completing their college education. There are large disparities in academic preparation for boys and young men of color at all levels. For example, "Black and Latino males are conspicuously overrepresented on most indicators associated with risk and academic failure" (Fergus, Noguera, & Martin, 2014, p. 121). As a result of these circumstances, men of color are more likely to be the victims of violent crimes (U.S. Department of Education, 2014). Given these broader contexts, which are often used to describe the state of educational opportunities for men of color, focusing on the role that MSIs play in providing educational opportunities to men of color is critical, particularly given their enrollment trends. Based on Fall 2012 data, over 36% of men of color who are enrolled full-time in college are found at MSIs, and this number increases to nearly half (48.6%) of men of color when including part-time college enrollment.

Disaggregating enrollment data allows us to identify MSIs' disproportionate enrollment of certain racial and ethnic groups. The number of students of specific racial/ethnic groups enrolled at MSIs are larger than one would expect for a group of institutions that constitute less than one fifth of all postsecondary institutions in the nation. For instance, of all male college students enrolled nationwide, MSIs enroll 52% of those who are Hispanic, 45% of those who are Native Hawaiian and Pacific Islander, 35.5% of those who are Asian American, 25% of those who are Black, and 22% of those who are American Indian and Alaskan Native men. (See Table 1 for a summary of men's enrollment data.)

Enrollment proportions for men of color at MSIs are even higher when we consider part-time enrollments. These institutions enroll 69% of all Hispanic men, 67% of Native Hawaiian and Pacific Islander men, 60% of Asian American men, 28% of American Indian and Alaskan Native men, and 25% of Black men when including part-time enrollment. (See Table 1 for a summary of men's part-time enrollment.)

As with enrollment, MSIs also demonstrate commendable labor in educating men of color, as evident in the percentages of degrees conferred. Of the 196,110 bachelor's degrees conferred to men of color in 2011–2012, 24% ($n = 47,066$) were awarded by MSIs. Twenty-two percent ($n = 50,829$) of men of color with associate degrees earned them at MSIs. To provide context for these figures, it is important to note that MSIs conferred 13% of all bachelor's degrees and 23% of all associate's degrees in the nation in Fall 2012. Further data disaggregation demonstrates that, within MSIs, Asian American men earn 13.7% of the total bachelor's degrees, which is 8% higher than Asian Americans at non-MSIs, where they represent only 5.7% of all degrees conferred. In fact, with the exception of whites, all racial groups have greater representation of bachelor's degrees conferred at MSIs than at their non-MSI counterparts.

Table 1

Men's College Enrollment by Race/Ethnicity and Student Status, Fall 2012

	Institution Type	Total Male Enrollment	American Indian/ Alaskan Native Men	Asian American	Black/ African-American	Hispanic	Native Hawaiian/ Pacific Islander	White	Two or More Races
Full-Time Students	All Institutions	4,992,049	37,205	301,846	589,059	625,515	14,514	2,859,672	126,596
	MSIs	916,907 (18%)	8,197 (22%)	107,134 (35%)	147,318 (25%)	322,388 (52%)	6,510 (45%)	231,907 (8%)	2,4537 (19%)
	Non-MSIs	40,75,142 (82%)	29,008 (78%)	194,712 (65%)	441,741 (75%)	303,127 (48%)	8,004 (55%)	2,627,765 (92%)	102,059 (81%)
Part-Time Students	All Institutions	2,164,586	18,066	124,281	298,749	410,187	8,108	1,096,674	46,311
	MSIs	744,261 (34%)	5,147 (28%)	75,476 (61%)	83,013 (28%)	284,682 (69%)	5447 (67%)	225,683 (21%)	18,354 (40%)
	Non-MSIs	1,420,325 (66%)	12,919 (72%)	48,805 (39%)	215,736 (72%)	125,505 (31%)	2661 (33%)	870,991 (79%)	27,957 (60%)

Note. Data are from the U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics (2013). Percentages are the proportion of a given cell in relation to the total students in the specific racial/ethnic and student status categories. Percentages are rounded and may not equal 100.

Promoting Teacher Education

Institutions of higher education play a vital role in K–12 education by inspiring, instructing, and certifying the future teachers and leaders of the nation's schools and school systems. As the demographics of the K–12 public school system reflect the nation's racial diversity, there is a significant need to prepare more teachers of color, as demonstrated by the U.S. Department of Education (2016). Examining and strengthening the role that MSIs play in producing future racial-minority teachers should be a national imperative.

Evidence suggests that MSIs can play a significant role in preparing teachers of color from various racial and ethnic groups. Between July 1, 2012, and June 30, 2013, there were 106,580 bachelor's degrees in education conferred in the United States. Of these, 11,289 were conferred by MSIs (14.5%). Of note, MSIs accounted for 51% of all bachelor's degrees in education conferred to Hispanics, 42.7% for Native Hawaiians and Pacific Islanders, 33% for Asians, and 30% for Black people and African Americans (U.S. Department of Education, 2013).

One illuminating statistic points to the need for higher-education institutions to increase their offerings in education to students of color; only 2% of teachers are Black men, as suggested by the National Schools and Staffing Survey (SASS), which has been explored in other work (Ginsberg, Gasman & Castro Samayoa, 2017). By graduating a large proportion of the nation's racial-minority education majors, MSIs already play a significant role in diversifying the potential pool of candidates that enter the teaching profession, but they have the capability of contributing even more (Ginsberg et al., 2017). In 2011–2012, 192 MSIs (36%) across 17 states and one U.S. territory (Puerto Rico) conferred bachelor's degrees in education. Of these, 74 were HBCUs, 77 were HSIs, 36 were AANAPISIs, and nine were TCUs.[6] Almost three quarters (72.55%) of all HBCUs confer bachelor's degrees in education, but this percentage drops to a quarter for the other MSIs.

In the emerging outcomes-based metrics used to judge the contributions and overall success of higher-education institutions, policymakers have typically focused on six-year graduation rates and graduates' potential income earnings without consideration for the type of employment sectors where racial and ethnic diversity is needed. But given the consistent shortage of teachers of color in the K–12 sector (Ingersoll & May, 2011), and MSIs' contribution to addressing this shortage, policymakers should reconsider what counts as a metric in emerging outcome-based rubrics. We suggest that, much like the rationale offered to support the advancement of underrepresented racial minorities in STEM (Carnevale, Smith, & Melton, 2011), supporting the diversification of the teaching profession is equally well-suited as a future metric of institutional success.

Success in Science, Technology, Engineering, and Mathematics

The continued security and health of our nation are contingent upon innovative discoveries in STEM that open new possibilities in technology, manufacturing, and healthcare. Colleges and universities are not producing sufficient numbers of STEM

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[6] Note, however, that there are four institutions with dual HSI/AANAPISI designations.

graduates to satisfy the demands of our economy (Perna et al., 2009). Reports from prominent national and academic institutions (Carnevale et al., 2011; National Academy of Sciences, 2011) insist that improving the educational attainment of individuals from the most disadvantaged backgrounds (i.e., racial-minority students) is a solution for meeting this workforce demand. With their successful record of enrolling and graduating racial-minority students, MSIs should receive consideration and attention for their efforts in improving the representation of students of color in STEM.

The underrepresentation of racial minorities in the STEM fields and workforce can be linked to challenges—or leaks—within the educational pipeline from early education through college. Racial minorities have fewer developmental opportunities—offered by well-resourced homes and schools rich with financial, social, and cultural capital—to strengthen and shape the skills, dispositions, and experiences needed for achievement in STEM (Massey, Charles, Lundy, & Fischer, 2011). For instance, enrollment in accelerated math and science courses in secondary school strongly influences students' achievement in college-level STEM courses and their persistence through degree completion (Maltese & Tai, 2011; Tyson, Lee, Borman, & Hanson, 2007). Unfortunately, recent data from the U.S. Department of Education (2012) demonstrate that underrepresented minorities are less likely to be enrolled in college preparatory and Advanced Placement or honors-level courses, decreasing the likelihood of their success in STEM fields. This may explain why gains in racial-minority enrollment in postsecondary education in the past 30 years have not manifested into improved and equitable representation in the STEM workforce (Cannady, Greenwald, & Harris, 2014).

According to data from NSF (see Table 2), across all occupations in science and engineering, Hispanics account for 5% of all professionals, with Black people representing 5%, and American Indians or Alaskan Natives and Native Hawaiians and Pacific Islanders representing less than 1%. Despite the fact that Asians are overrepresented at 18% of all professionals in science and engineering occupations, data that is disaggregated by ethnicity illuminates the struggles experienced by some communities within the Asian diaspora (Teranishi, 2010).

The unequal representation of minorities in the STEM workforce can be attributed to the types of postsecondary institutions students attend, as well as the quality of their collegiate experiences. Based on traditional measures of achievement in postsecondary STEM classes and statistics on baccalaureate degree completion in STEM fields, the performance of students of color is often perceived to be lower than that of their white counterparts (Riegle-Crumb & King, 2010). Although under-preparation at the secondary level can hinder students' performance in STEM, several studies have suggested that, for students of color, the dynamics of the college environment may be the primary culprit affecting achievement (Alexander, Chen, & Grumbach, 2009; Seymour & Hewitt, 2000). Racial-minority students—especially Hispanics and Black people—underperform in STEM when embedded in a competitive climate, commonly found at PWIs, that may undermine their confidence and sense of belonging (McClain, 2014; Seymour & Hewitt, 2000). In contrast, higher STEM achievement among racial-minority students is associated with climates that promote collaboration and feature an increased presence of minority peers and faculty mentors (Maton, Hrabowski, & Freeman, 2004). Notably, these conditions have been observed at several MSIs (Perna et al., 2009).

Table 2

Distribution of Employed Scientists and Engineers by Occupation, Ethnicity, and Race, 2010

	All Degrees	Hispanic or Latino	American Indian or Alaska Native	Asian	Black or African American	Native Hawaiian and Pacific Islander	White	More than One Race
All ethnicities and races	21,903,000	7%	0.3%	12%	6%	0.3%	74%	1%
S&E occupations	5,398,000	5%	0.2%	18%	5%	0.2%	70%	1%
Science occupations	3,829,000	5%	0.2%	19%	5%	0.2%	69%	2%
Biological/Life scientist	597,000	5%	*	19%	3%	*	71%	2%
Computer and information scientist	2,204,000	5%	*	23%	6%	*	65%	2%
Mathematical scientist	190,000	2%	*	19%	4%	*	71%	*
Physical scientist	321,000	5%	*	14%	4%	*	76%	2%
Psychologist	210,000	6%	*	3%	5%	*	83%	2%
Social scientist	309,000	5%	*	8%	5%	*	80%	2%
Engineering occupation	1,569,000	5%	*	17%	4%	*	72%	1%
S&E-related occupations	6,957,000	6%	0.3%	11%	6%	0.4%	75%	1%
Non-S&E occupations	9,549,000	8%	0.3%	8%	7%	0.3%	75%	1%

Note. * = Suppressed for data confidentiality and reliability reason. S&E = science and engineering. Details may not add to totals because of rounding and suppression. Scientists and engineers are individuals with a bachelor's or higher degree living in the United States with an S&E-related degree or occupation. Persons of Hispanic or Latino origin may be of any race. Data are from National Science Foundation, National Center for Science and Engineering Statistics (2015b).

As with the conferring of education degrees, MSIs contribute disproportionately to STEM education for racial minorities. Table 3[7] shows the number of baccalaureate degrees across STEM fields awarded to Black people, Hispanics, and American Indians and Alaska Natives, and the percentage of graduates by each respective MSI. Despite making up less than 3% of all U.S. postsecondary institutions, HBCUs award nearly 17% of all baccalaureate degrees in the sciences to Black students. Of all Black graduates nationwide, 33% with degrees in the physical sciences and 19% with degrees in engineering graduated from an HBCU. Almost 37% of Hispanics who have earned a baccalaureate degree in science and engineering fields graduated from an HSI,[8] despite HSIs making up less than 6% of U.S. colleges and universities. In the physical sciences and mathematics, respectively, HSIs graduated 37% of all Hispanic students. TCUs awarded 2% of those baccalaureate degrees earned by American Indians and Alaska Natives in science and engineering, almost 10% in the agricultural sciences, and nearly 3% in computer science, despite representing less than 0.5% of all postsecondary institutions in the United States. Put simply—based on absolute production of STEM graduates—MSIs, although small in number, are a formative and influential institutional force in shaping the opportunities and achievement of racial minorities in STEM.

These degree conferral rates suggest that MSIs possess the resources to cultivate STEM achievement and talent in their student populations. At the institutional level, racial concordance between students, faculty, and staff is important to minority students' sense of belonging and engagement in campus and academic life (Berger & Milem, 2000; Gasman, Hirschfeld, & Vultaggio, 2008). A large presence of racial-minority faculty may create a climate that is more sensitive to the achievements and struggles that their students are experiencing (Conrad & Gasman, 2015; Gasman et al., 2008), and a large presence of peers from similar backgrounds can minimizes the feelings of isolation and tokenism that are commonly experienced by minority students at PWIs (Love et al., 2009; McClain, 2014). Institutions like MSIs (e.g., HBCUs and TCUs)—by providing this racial concordance along with opportunities for research and engagement—appear to be developing a "culture of science" (Hurtado, Newman, Trang, & Chang, 2010, p. 7), encouraging students to develop scientific identities without neglecting their racial identities (Gasman & Nguyen, 2014; Perna et al, 2009). Given the nation's need for additional STEM workers and the dearth of diversity in the STEM workforce, MSIs should be recognized and rewarded for the substantial role they play in the STEM arena.

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[7] AANAPISIs were not included in this discussion as STEM-related data was not available at the time of writing.

[8] Instead of *Hispanic Serving Institution*, the NSF uses *High Hispanic Enrollment* because the only criterion used for inclusion was 25% or more Hispanic student enrollment. For the sake of cohesion, we have replaced NSF's term with HSI. Note, however, that these terms are not equal since High Hispanic Enrollment does not beget Pell Grant eligibility.

Table 3

Bachelor's Degrees Awarded in Science & Engineering by Select Racial/Ethnic Groups and Institutional Types

All Institutions	Black	Hispanic	American Indian and Alaska Native
All fields	172,868	176,699	10,743
S&E	49,683	58,146	3,411
Science	46,465	50,973	3,102
Agricultural sciences	704	1,407	213
Biological sciences	7,073	8,891	576
Computer sciences	4,847	4,210	231
Earth, atmospheric, and ocean sciences	119	323	47
Mathematical sciences	964	1,277	58
Physical sciences	1,305	1,428	87
Psychology	12,709	13,353	711
Social sciences	18,744	20,084	1,179
Engineering	3,218	7,173	309
Non-S&E	123,185	118,553	7,332

Minority Serving Institutions	HBCU (%)	HSI (%)	TCU (%)
All fields	16.7	37.0	2.4
S&E	17.8	33.8	2.2
Science	17.7	33.3	2.4
Agricultural sciences	32.1	26.8	10.8
Biological sciences	28.1	37.9	0.0
Computer sciences	14.3	29.0	2.6
Earth, atmospheric, and ocean sciences	7.6	28.5	0.0
Mathematical sciences	29.5	37.3	0.0
Physical sciences	33.4	37.5	0.0
Psychology	17.8	39.2	0.1
Social sciences	12.5	28.2	3.8
Engineering	19.0	37.5	0.0
Non-S&E	16.3	38.5	2.4

Note. HBCU = Historically Black Colleges and universities. HSI = Hispanic Serving Institutions. TCU = Tribal College & Universities. S&E = Science & Engineering. Data are based on degree-granting institutions eligible to participate in Title IV federal financial aid programs and do not match previously published data that were based on accredited higher education institutions. Data are from National Science Foundation, National Center for Science and Engineering Statistics, special tabulations of U.S. Department of Education; National Center for Education Statistics: Integrated Postsecondary Education Data System, Completions Surveys, 2002-12 (National Science Foundation, 2015a).

The Role of Two-Year Minority Serving Institutions

Like four-year MSIs, many two-year institutions represent greater access to postsecondary education for racial minorities and low-income students. They provide a wide range of developmental education programs, award sub-baccalaureate credentials, and provide a pathway to four-year institutions, offering a swath of opportunities individuals may benefit from amid the increasing importance of higher education in the workforce. Of the 1,132 two-year colleges in the United States, 22% are designated MSIs (Nguyen et al., 2015). These two-year MSIs make up 46% of all MSIs. Despite the substantial presence of two-year colleges in American higher education, empirical work on MSIs in this sector is, to the best of our knowledge, scant (Nguyen et al., 2015). This paucity of empirical work is notable given the ongoing interest from foundations seeking to provide greater credentialing to individuals through programs like associate's degrees and certificates. This section pulls together data from NCES (U.S. Department of Education, 2012) to discuss two-year colleges' role in serving minority and low-income students. As documented in Table 4, two-year MSIs enroll a large proportion of students of color, suggesting that policymakers and foundations could better support these students by focusing their efforts on such institutions.

Although just 3% of two-year institutions identify as AANAPISIs, these institutions enroll 16% of all Asians and Pacific Islanders in the two-year system, and they award degrees to 40% of the same population. Two-year HBCUs represent 1% of all two-year institutions, but award degrees to 3% of the Black college student population. HSIs make up 7% of all two-year institutions, but enroll 28% of the Hispanic population and award degrees to 45% of all Hispanic students in two-year colleges. TCUs represent 1% of all two-year institutions, but enroll 3% and award degrees to 5% of all American Indian or Native Alaskan students in two-year colleges (Stull, Spyridakis, Gasman, Castro Samayoa, & Booker, 2015). Given the distinct mission of two-year institutions to serve student populations from a broader range of backgrounds than four-year institutions, the broad classification of MSIs—of which nearly half are two-year institutions—must be parsed out in future research. Such a significant number of two-year MSIs certainly warrants separate studies that examine their influence on student achievement (Nguyen et al., 2015).

Concluding Thoughts and Recommendations

MSIs are beginning to gain attention for their work with low-income students and students of color; however, progress is slow. Because these institutions are diverse in nature and have fewer resources than PWIs, they struggle to bring attention to their strengths and challenges. In order to steer a steady course through the rough waters of outcomes-based funding, it is necessary for MSIs to garner attention for the unique role that they play in U.S. higher education.

Disregard for MSIs at the federal level, evidenced by a lack of increased funding under the Trump administration, will impede efforts to improve the overall educational attainment of the nation's students. In this article, we have presented evidence suggesting MSIs can significantly advance the nation's agenda on minority male achievement, diversify teacher education, and increase STEM graduates, especially through men of color's enrollments in two-year higher-education institutions. Although many

policymakers and funders turn to the most elite colleges and universities in our nation as leaders and exemplars of achievement, many of these institutions enroll low numbers of racial minorities. To address our most pressing issues in education, our data suggest that the nation should look to MSIs as potential partners. In order to do this, federal policymakers must consider different, and more appropriate, benchmarks of postsecondary success so as not to inherently privilege PWIs, especially those that are more resourced. Policymakers must recognize the historical and social context of MSIs as a collective of under-resourced institutions that serve students from impoverished communities. When assessing the potential of MSIs to elevate our nation's education and workforce, we encourage leaders and policymakers to take a critical perspective on the ways in which comparisons between institutions can unfairly distribute federal resources. Toward this end, we provide the following recommendations to policymakers, researchers, and practitioners.

Table 4
Enrollment of Undergraduate Students at Two-Year MSIs, By Type

	Institutions		Enrollment		Degrees	
	Number of institutions	% of all two-year institutions	Number of target population	% of target population	Number of target population	% of target population
AANAPISI	81	3%	199,938	16%	19,670	40%
HBCU	13	1%	24,191	1%	3,809	3%
HSI	170	7%	844,355	28%	67,602	45%
TCU	20	1%	4,742	3%	537	5%

Note. Data are from U.S. Department of Education, National Center for Education Statistics, IPEDS 12-Month Enrollment and Completion Surveys, 2011–2012 (2016). The total number of two-year MSIs was 284. These data are based on a combination of resources including U.S. Department of Education, as well as those belonging to corresponding policy and advocacy organization groups.

Policymakers

MSIs, by virtue of their name, represent the mosaic of our nation's racial and ethnic diversity. If policymakers want to invest in the education and economic opportunities of oft-forgotten populations, then MSIs are a prime target as they offer countless avenues for systematic change. When evaluating MSI performance, policymakers should consider the significant contributions they make in high-need areas, such as teacher education among men of color and increasing the number of racial minorities pursuing STEM-related degrees. If MSIs are left out of national conversations, research and funding decisions will continue to privilege PWIs, which typically have more resources and serve fewer low-income students of color. In this way, ignoring the contributions and needs of MSIs reproduces and deepens the stratification and racial polarization of our society. To counteract the influence of racial stratification on minority student achievement, those with the power to make systemic change should look to MSIs for solutions to shortages of teachers of color and STEM workers.

Elsewhere, we have argued that MSIs are often cast negatively under rubrics that do not account for their focus on serving students with educational backgrounds that other institutions deem unfit for success (Conrad & Gasman, 2015; Gasman, 2007). Our focus in this paper has been to showcase areas where MSIs continue to serve an important role in the national landscape. In doing so, we hope to cast a new light on areas (e.g., preparation of future educators) that are worth highlighting as valuable metrics that can be used to assess an institution beyond the six-year aggregate graduation rate and expected earning outcomes. MSIs have a track record of preparing students of color in education and STEM-related fields, especially those that work in minority communities after graduation. Lastly, we suggest that those at the state and federal level consider the richness of MSI student bodies—including part-time, transfer, and swirling (dropping in and out) students—when evaluating their graduation rates and overall performance. These institutions have the student bodies of the future, not the past.

Researchers

As MSIs represent the future of higher education, we suggest that more researchers consider including them in research studies. For too long, there has been a considerable stigma around conducting research related to institutions that serve low-income students and students of color (Conrad & Serlin, 2011). Researchers should consider examining MSIs' success in teacher education programs, teacher placement, and teacher longevity rates, and use their practices to inform other practices throughout the nation. Researchers can also analyze the way STEM learning is structured to cultivate minority student achievement. Moreover, researchers would do a great service by examining the MSIs' contributions to the health of their local communities through their teaching partnerships and their commitment to serve as resources for both their students and the broader public. In doing so, we hope researchers can continue to expand upon the myriad positive outcomes emerging from these types of institutions—outcomes that are beyond the purview of current metrics to assess institutional performance.

Practitioners

We suggest that MSIs build coalitions rather than operate in silos based on individual type (e.g., HBCUs, TCUs). Coalitions across different types of MSIs could showcase the positive contributions of MSIs, such as the data that we have outlined in this paper, to communicate their strengths and advocate for their common interests. We also suggest that practitioners cultivate pride in the MSI designation. The data we have provided demonstrate that MSIs continue to make strides in educating those who have the most to gain, even in the face of inhospitable financial times. To be called an MSI should be a mark of pride for institutions that model effective institutional resilience and capacity to transform the lives of racially diverse student bodies.

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References

Alexander, C., Chen, E., & Grumbach, K. (2009). How leaky is the health career pipeline? Minority student achievement in college gateway courses. *Academic Medicine, 84*, 797–802. https://doi.org/10.1097/acm.0b013e3181a3d948

American Council on Education. (2015). *The president study.* Washington, DC: American Council on Education. Retrieved from http://www.acenet.edu/news-room/Pages/American-College-President-Study.aspx

Berger, J. B., & Milem, J. F. (2000). Exploring the impact of historically Black colleges in promoting the development of undergraduates' self-concept. *Journal of College Student Development, 41*(4), 381–394.

Brayboy, B. M. J., Fann, A. J., Castagno, A. E., & Solyom, J. A. (2012). *Postsecondary education for American Indian and Alaska Natives: Higher education for nation building and self-determination.* San Francisco, CA: Jossey-Bass.

Calderón Galdeano, E., & Santiago, D. A. (2014). *Hispanic Serving Institutions (HSIs) Fact Sheet: 2012–2013.* Retrieved from http://www.edexcelencia.org/hsi-cp2/research/hispanic-serving-institutions-hsis-fact-sheet-2012-13

Cannady, M. A., Greenwald, E., & Harris, K. N. (2014). Problematizing the STEM pipeline metaphor: Is the STEM pipeline metaphor serving our students and the STEM workforce? *Science Education*, *98*(3), 443–460. http://doi.org/10.1002/sce.21108

Carnevale, A. P., Smith, N., & Melton, M. (2011). *STEM: Science, technology, engineering, mathematics.* Retrieved from https://cew.georgetown.edu/cew-reports/stem/#full-report

Conrad, C. F., & Gasman, M. (2015). *Educating a diverse nation: Lessons from Minority Serving Institutions.* Cambridge, MA: Harvard University Press.

Conrad, C. F., & Serlin, R. C. (2011). *The SAGE handbook for research in education* (2nd ed.)*.* San Francisco, CA: SAGE Publications.

Cunningham, A., Park, E., & Engle, J. (2014). Minority Serving Institutions: Doing more with less. *Institute of Higher Education Policy.* Washington, DC: Institute for Higher Education Policy. Retrieved from http://www.ihep.org/research/publications/minority-serving-institutions-doing-more-less

Fergus, E., Noguera, P., & Martin, M. (2014). *Schooling for resilience: Improving the life trajectory of Black and Latino boys*. Cambridge, MA: Harvard Education Press.

Freeman, S., Jr., & Gasman, M. (2014). Characteristics of Historically Black Colleges and university presidents and their role in grooming the next generation of leaders. *Teachers College Record*, *116*(7), 1–34.

Gasman, M. (2007). Truth, generalizations, and stigmas: An analysis of the media's coverage of Morris Brown College and Black colleges overall. *Review of Black Political Economy, 34*(2), 111–135. doi.org/10.1007/s12114-007-9001-z

Gasman, M. (2011). Perceptions of Black college presidents: Sorting through stereotypes and reality to gain a complex picture. *American Educational Research Journal, 48*, 836–870. https://doi.org/10.3102/0002831210397176

Gasman, M., Castro Samayoa, A., Boland, W. C., Washington, A., Jimenez, C., & Esmieu, P. (2016). *Investing in student success: The return on investment of Minority Serving Institutions.* Philadelphia, PA: Penn Center for Minority Serving Institutions.

Gasman, M., Hirschfeld, A., & Vultaggio, J. (2008). "Difficult yet rewarding": The experiences of African American graduate students at an Ivy League institution. *Journal of Diversity in Higher Education, 1*(2), 126–138. https://doi.org/10.1037/1938-8926.1.2.126

Gasman, M., & McMickens, T. L. (2010). Liberal or professional education?: The missions of public Black colleges and universities and their impact on the future of African Americans. *Souls: A Critical Journal of Black Politics, Culture, and Society, 12*(*3*), 286–305. https://doi.org/10.1080/10999949.2010.499800

Gasman, M., & Nguyen, T. H. (2014). Historically Black Colleges and Universities: Leading our nation's efforts to improve the science, technology, engineering, and mathematics (STEM) pipeline. *Texas Education Review, 2*(1), 75–89.

Ginsberg, A., Gasman, M., & Castro Samayoa, A. (2017). The role of Minority Serving Institutions in transforming teacher education and diversifying the teaching profession: A literature review and research agenda. *Teachers College Record*, *119*(10), 1–31.

Hurtado, S., Newman, C. B., Tran, M. C., & Chang, M. J. (2010). Improving the rate of success for underrepresented racial minorities in STEM fields: Insights from a national project. *New Directions for Institutional Research, 2010*(148), 5–15. http://doi.org/10.1002/ir.357

Ingersoll, R. M., & May, H. (2011). The minority teacher shortage: Fact or fable? *Phi Delta Kappan*, *93*(1), 62–65. https://doi.org/10.1177/003172171109300111

Jones, T., Jones, S., Elliott, K. C., Owens, L., Assalone, A., & Gándara, D. (Eds.). (2017). *Outcomes-based funding and race in higher education: Can equity be bought?* New York, NY: Palgrave MacMillan.

Love, K., Tyler, K., Thomas, D., Garriott, P., Brown, C., & Roan-Belle, C. (2009). Influence of multiple attachments on well-being: A model for African Americans attending Historically Black Colleges and Universities. *Journal of Diversity in Higher Education*, *2*(1), 35–45. https://doi.org/10.1037/a0012651

Lundy-Wagner, V., Vultaggio, J., & Gasman, M. (2013). Preparing underrepresented students of color for doctoral success: The role of undergraduate institutions. *International Journal of Doctoral Studies*, *8*, 151–172.

Maltese, A. V., & Tai, R. H. (2011). Pipeline persistence: Examining the association of educational experiences with earned degrees in STEM among U.S. students. *Science Education*, *95*, 877–907. https://doi.org/ 10.1002/sce.20441

Massey, D. S., Charles, C. Z., Lundy, G., & Fischer, M. J. (2011). *The source of the river: The social origins of freshmen at America's selective colleges and universities*. Princeton, NJ: Princeton University Press.

Maton, K. I., Hrabowski, F. A., III, & Freeman, A. (2004). Increasing the number of African American PhDs in the sciences and engineering: A strengths-based approach. *American Psychologist*, *59*(6), 547–556. https://doi.org/10.1037/0003-066X.59.6.547

McClain, O. L. (2014). Negotiating identity: A look at the educational experiences of Black undergraduates in STEM disciplines. *Peabody Journal of Education, 89*(3), 380–392. https://doi.org/10.1080/0161956X.2014.913451

Merisotis, J., & O'Brien, C. (Eds.) (1998). *Minority serving institutions: Distinct purposes, common goals.* San Francisco, CA: Jossey-Bass.

National Academy of Sciences, Committee on Underrepresented Groups and the Expansion of the Science and Engineering Workforce Pipeline, Committee on Science, Engineering, and Public Policy and Global Affairs (2011). *Expanding underrepresented minority participation*. Retreived from https://grants.nih.gov/training/minority_participation.pdf

National Science Foundation, National Center for Science and Engineering Statistics. (2015a). *National survey of college graduates.* Arlington, VA: National Science Foundation. Retrieved from https://www.nsf.gov/statistics/srvygrads/#products

National Science Foundation, National Center for Science and Engineering Statistics. (2015b). *Science and engineering degrees, by race/ethnicity of recipients: 2002–2012* (Detailed Statistical Tables NSF 15-321). Arlington, VA: National Science Foundation. Retrieved from https://www.nsf.gov/statistics/2015/nsf15321/#chp5

Nguyen, T. H., Lundy-Wagner, V., Castro Samayoa, A., Gasman, M., Wilson, A., Diggs, D., . . . & Boland, W. (2015). *On their own terms: Two-year Minority Serving Institutions.* Philadelphia, PA: Penn Center for Minority Serving Institutions. Retrieved from https://www2.gse.upenn.edu/cmsi/sites/gse.upenn.edu.cmsi/files/MSI_CCreport_FINAL.pdf

Nuñez, A. M., Hurtado, S., & Calderón Galdeano, E. C. (Eds.). (2015). *Hispanic-Serving Institutions: Advancing research and transformative practice.* New York, NY: Routledge Press.

Office of Postsecondary Education (2016). *Eligibility Matrix 2016*. Retrieved from http://www2.ed.gov/about/offices/list/ope/idues/em2016.xls

Orfield, G. (Moderator). (2014, September 2). *Do higher education accountability proposals narrow opportunity for minority students and Minority Serving Institutions?* Briefing conducted at the meeting of the Civil Rights Project, Washington, DC. Retrieved from https://civilrightsproject.ucla.edu/events/2014/higher-ed-accountability-briefing/will-higher-ed-accountability-proposals-narrow-opportunity-for-minority-students-minority-serving-institutions

Penn Center for Minority Serving Institutions. (2016). *MSI directory.* Retrieved from http://www2.gse.upenn.edu/cmsi/content/msi-directory

Perna, L. W. (2010). *Understanding the working college student: New research and its implications for policy and practice*. Herndon, VA: Stylus Publishing.

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

Riegle-Crumb, C., & King, B. (2010). Questioning a white male advantage in STEM: Examining disparities in college major by gender and race/ethnicity. *Educational Researcher*, *39*, 656–664. https://doi.org/10.3102/0013189X10391657

Rochet, A. (2015). *Fostering empowerment: Supporting student success at Native American Serving, Non-Tribal Institutions.* Philadelphia, PA: Penn Center for Minority Serving Institutions. Retrieved from http://www2.gse.upenn.edu/cmsi/sites/gse.upenn.edu.cmsi/files/MSI_AIANrprt_R3.pdf

Seymour, E., & Hewitt, N. M. (2000). *Talking about leaving: Why undergraduates leave the sciences*. Boulder, CO: Westview Press.

Stull, G., Spyridakis, D., Gasman, M., Castro Samayoa, A., & Booker, Y. (2015). *Redefining success: How tribal colleges and universities build nations, strengthen sovereignty, and persevere through challenges.* Philadelphia, PA: Penn Center for Minority Serving Institutions. Retrieved from https://www2.gse.upenn.edu/cmsi/sites/gse.upenn.edu.cmsi/files/MSI_TBLCLLGreport_Final.pdf

Teranishi, R. T. (2010). *Asians in the ivory tower: Dilemmas of racial inequality in American higher education.* New York, NY: Teachers College Press.

Tyson, W., Lee, R., Borman, K. M., & Hanson, M. A. (2007). Science, technology, engineering, and mathematics (STEM) pathways: High school science and math coursework and postsecondary degree attainment. *Journal of Education for Students Placed at Risk*, *12*(3), 243–270. https://doi.org/10.1080/10824660701601266

U.S. Department of Education. (n.d.-a). *Developing Hispanic-Serving Institutions program–Title V.* Retrieved from https://www2.ed.gov/programs/idueshsi/index.html

U.S. Department of Education. (n.d.-b*). Title III Part A programs–Strengthening institutions.* Retrieved from https://www2.ed.gov/programs/iduestitle3a/index.html

U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. (2013). *Digest of education statistics*. Retrieved from *https://nces.ed.gov/programs/digest/2013menu_tables.asp*

U.S. Department of Education, My Brother's Keeper Task Force (2014). *My Brother's Keeper task force report to the president*. Retrieved from https://ojp.gov/fbnp/pdfs/mbkreport.pdf

U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS). (2016). *12-Month Enrollment and Completion Surveys, 2011–2012* [Table documentation for the IPEDS access database, 2011–2012, final release]. Retrieved from https://nces.ed.gov/ipeds/Section/accessdatabase/

U.S. Department of Education, Office of Planning, Evaluation and Policy Development, Policy and Program Studies Service (2016, July). *The state of racial diversity in the educator workforce*. Retrieved from http://www2.ed.gov/rschstat/eval/highered/racial-diversity/state-racial-diversity-workforce.pdf