

Adverse impact in black student 6-year college graduation rates

Charles J. Hobson
Indiana University Northwest

Jana Szostek
Indiana University Northwest

Andrea Griffin
Indiana University Northwest

ABSTRACT

Using recent 6-year college graduation data from the U.S. Department of Education, for the nation as a whole and the 50 states and District of Columbia, the respective graduation percentages for white and black students were compared employing the four-fifths rule for adverse impact, first proposed in the Federal Uniform Guidelines on Employee Selection Procedures published by the Equal Employment Opportunity Commission in 1978. Results indicated: (1) pronounced adverse impact using the four-fifths rule on black students at the national level, (2) evidence of adverse impact on black students in 48 of the 51 states and District of Columbia, (3) no adverse impact on black students in Maine, New Hampshire, or Rhode Island, and (4) the ten states with the worst performance were Alaska, Kansas, Michigan, Oklahoma, Arkansas, Wisconsin, Indiana, Ohio, Illinois, and Colorado. Recommendations to address these disparate college graduation rates for black students are offered.

Keywords: Adverse impact, Black student graduation rates, 4/5ths rule

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INTRODUCTION

The problem of differential and adverse outcomes for black students has long challenged the U.S. higher education system. Researchers have documented substantial post-secondary disparities between black and white students in the following areas: (1) persistence/drop-out rates (Bowen *et al.*, 2009), (2) grades/GPA (Bowen & Bok, 1998; Bowen *et al.*, 2009; Charles *et al.*, 2009; Espenshade & Radford, 2009; Kao & Thompson, 2003; Kugelmass & Ready, 2011; Martin *et al.*, 2017), and (3) graduation rates (Bowen *et al.*, 2009; Kugelmass & Ready, 2011; Musu-Gillette *et al.*, 2016; Nichols *et al.*, 2016; Radford *et al.*, 2010).

When comparing the higher education experiences of black and white college students, arguably the most important, bottom-line educational outcome is graduation rate. Three studies cited above addressed differential 6-year graduation rates at four-year U.S. colleges and universities. Nichols *et al.* (2016) found that the 6-year graduation rates in 2003 were 38.2% for Black students and 55.4% for White students. Comparative rates in 2009 were reported by Radford *et al.*: Black students, 40.5% and White students 62.6%. Finally, Musu-Gillette *et al.* (2016) determined that the 6-year graduation rates for the period 2007-2013 for Black students and White students were respectively, 41.0% and 63.0%.

Causal Explanations

Researchers have examined potential causal explanations for the consistent gap in post-secondary academic outcomes between Black and White students, including the large difference in 6-year graduation rates. The causal factors that have been identified can be classified into two broad categories: (1) pre-enrollment and (2) post-enrollment.

Pre-Enrollment Factors

Several studies have shown that many Black families with lower income levels are served by under-funded and under-performing public schools (Morgan & Amerikaner, 2018; Perry *et al.*, 2003; Scott *et al.*, 2016; The Education Trust, 2014). For example, Morgan & Amerikaner reported that school districts with the largest numbers of Black students receive \$1,800 (13%) less than districts with the fewest students of color. They note that for a school district with 5,000 students, the total deficit in funding is \$9 million annually.

Lower funding levels for schools with the highest percentages of Black students typically results in diminished educational opportunities (The Education Trust, 2014; Patrick *et al.*, 2020). They often include: (1) larger class sizes, (2) less qualified teachers, (3) core classes taught by teachers unfamiliar with the field, and (4) fewer AP/honors/college preparatory classes.

Further compounding these challenges are differential disciplinary rates and outcomes for Black students compared to White students. The U.S. Department of Education Office for Civil Rights (2014) reported that Black students are more likely to be disciplined in ways that remove them from classrooms. Specifically, while Black students represented 16% of all students in 2012, they made up 33% of those suspended once, 42% of those suspended two or more times, and 34% of those expelled.

The cumulative effect of the factors discussed above is poor college readiness for Black students. The ACT administers four basic skills tests to high school graduates in English, Reading, Math, and Science. These tests are designed to predict success in first year college courses. Black student test performance is consistently lower than that for White students (ACT,

2013). The percentage of Black students passing all four tests in 2013 was 5%, versus 33% for white students. The percentages of Black students and White students passing each of the four individual tests were respectively: English – 34% and 75%, reading – 16% and 54%, math – 14% and 53%, and science – 10% and 45%. Inadequate preparation for college leads to poor post-secondary academic outcomes for Black students, and ultimately, lower graduation rates.

Post-Enrollment Factors

Based upon an assessment of Black student post-secondary performance, Nichols and Evans-Bell (2017) concluded, “Many Black students encounter a unique combination of financial, academic, and social challenges that can make the path to degree completion rugged” (p. 1). The primary financial challenge is limited family income. This makes it difficult to continue funding college attendance for the four, five, or six years required to complete a degree, despite available scholarship and grant funding.

According to Nichols and Evans-Bell (2017), Attewell *et al.* (2006), Davis & Palmer (2010), and Logue *et al.* (2016), the poor academic preparation discussed above often results in the placement of Black students into remedial/developmental noncredit classes in their first year.. A report from Complete College America (2012) notes that, for many students, remedial classes will be their first and last college experience. This is especially true for Black students, with 56% enrolled in first-year remedial courses, versus 35% of White students. Unfortunately, the overall graduation rate for students who begin their college careers with remedial classes is only 17%.

Another important factor that negatively impacts Black student academic performance and graduation rates is the relative paucity of Black faculty members (Field, 2017; Koch & Zahedi, 2019). According to data from the US Department of Education (2019), the percentage of Black full-time faculty members at degree-granting postsecondary schools in Fall 2018 was only 6%. Thus, Black students are less able to interact with same-race faculty than White students, denying them of equal opportunities for mentoring, advising, and career counseling, all of which are essential for academic persistence to graduation.

Finally, Nichols and Evans-Bell (2017), Scott *et al.* (2016), and Harper and Hurtado (2008) have asserted that the campus climate for Black students can often be described as chilly and hostile, resulting from both overt racism and more subtle, but equally damaging micro-aggressions. The net result is a campus climate that is not viewed as welcoming, engaging, or supportive of Black students. As documented by Museus *et al.* (2008), a negative campus racial climate has a detrimental effect on Black student’s degree completion.

Purpose

Based upon the research findings presented above, it is reasonable to conclude that there are consistent and persistent differences in college graduation rates for black and white students. However, no interpretational framework has been offered to define, measure, and understand the magnitude of the disparities that exist. Researchers simply report the graduation rates for the two groups and note that the rates are lower for black students. Clearly, a common metric to operationally define observed disparities and interpret their severity/magnitude is needed.

The dual purpose of this paper is to: (1) introduce the 4/5th's rule as an objective, easily calculated operational definition of adverse impact in graduation rates and (2) apply the 4/5th's

rule to define, measure, and interpret adverse impact in 6-year college graduation rates for black students at the national and state levels.

METHOD

Origin and Use of the Four-Fifths Rule

The four-fifths rule was first introduced in the US federal government with the publication of the Uniform Guidelines on Employee Selection Procedures in 1978, (endorsed by the Equal Employment Opportunity Commission (EEOC), Civil Service Commission, Department of Labor, and Department of Justice), and used to enforce Title VII of the 1964 Civil Rights Act addressing discrimination in the workplace (EEOC, 1978). The rule provided an objective way to determine if an employment practice had an adverse impact on members of a legally protected class (defined by such factors as sex, race, religion, and ethnicity). In order to apply the four-fifths rule, one must first calculate the percentage rate of selection for applicants in both the majority group (often whites) and a designated protected class of minority group (for instance, blacks). Adverse impact is present if the selection rate for the minority group is not a least four-fifths as large as the rate for the majority group. See the sample calculations below.

Adverse Impact Calculations in Selection

Whites

- Total Applicants = 100
- Total applicants hired = 50
- Rate of Selection = .50 (50/100)
- Adverse impact would be present if the rate of selection for any minority group is less than four-fifths of .50 or .40 (.8 x .5 = .40).

Blacks

- Total Applicants = 50
- Total applicants hired = 10
- Rate of Selection = .2 (10 / 50)
- In this example, the black rate of selection of .2 is less than four-fifths of the white rate, .40, thus adverse impact is present.

It is important to note that the four-fifths rule provides a relative comparison between two selection rates and does not address their absolute magnitude. Adverse impact may be present, regardless of the magnitude of the selection rate for the majority group. It occurs in any situation when the minority selection rate is less than four-fifths of the majority rate.

Comparative Graduation Rates

Comprehensive information about 6-year graduation rates at U.S. four-year colleges and universities is maintained by the Department of Education National Center for Education Statistics in the Integrated Post-Secondary Education Data System (IPEDS). From this system, data were retrieved for graduation rates (2010-2016) at 4-year colleges and universities for all students combined, white students only, and black students only; for the nation, all 50 states, and the District of Columbia.

Four-fifths rule cut-off scores were calculated for each of these by multiplying the white student 6-year graduation rate by 0.8 (four-fifths). This figure was then compared to the black student 6-year graduation rate to determine if adverse impact was present. If the black student rate was in fact less than the four-fifths rule cut-off score, then adverse impact was present. For example, if the white student 6-year graduation rate for a particular state was 50%, the four-fifths rule cut-off score would be 40% ($50\% \times 0.8$). If the black student 6-year graduation rate for that state was 25%, one would conclude that adverse impact was present ($25\% < 40\%$).

RESULTS

Information concerning white and black 6-year graduation rates was obtained from the Department of Education IPEDS database for the nation and all 50 states, including the District of Columbia. Table 1 (Appendix) provides an alphabetized summary of this data, along with: (1) for reference purposes, the 6-year graduation rate for all students combined, (2) the white 6-year graduation rate, (3) the 4/5 rule cut-off value ($4/5 \times$ white 6-year graduation rate), (4) the black 6-year graduation rate, and (5) an indication of whether adverse impact is present using the 4/5 rule.

For example, in Table 1, for the nation as a whole: (1) the 6-year graduation rate for all students combined was 54.9%, (2) the white students only rate was 60.8%, (3) the 4/5 rule cut-off was 48.6% ($4/5$, or .8, multiplied by the white only rate of 60.8%), (4) the black students only rate was 35.9%, and (5) the evidence of pronounced adverse impact, as the black students only rate of 35.9% was substantially lower than the 4/5 rule cut-off of 48.6%. In addition to the finding of adverse impact at the national level, among the 50 states and DC:

1. 48/51 (94.1%) had adverse impact with black students and
2. 3/51 (5.9%) had no adverse impact: Maine, New Hampshire, and Rhode Island.

Table 2 (Appendix) offers information about the nation and a rank-ordering of states (and the District of Columbia) in terms of the black student 6-year graduation rate divided by the white student rate. For example, at the national level, the black student graduation rate in Table 2 is only 59.0% as high as the white rate. Other findings in Table 2 include:

- (1) The range in percentages for the 50 states and DC was 71.3%, from a low of 31.2% to a high of 102.5%.
- (2) The median percentage was 59.5% - essentially equivalent to the national percentage of 59.0%.
- (3) The 10 best states in descending order were:
 - a. Maine, 102.5% (the black student 6-year graduation rate of 53.0% was higher than the white rate of 51.7%)
 - b. New Hampshire, 93.1%
 - c. Rhode Island, 83.0%
 - d. Massachusetts, 78.5%
 - e. Hawaii, 76.6%
 - f. Vermont, 75.5%
 - g. New Mexico, 72.1%
 - h. Washington, 69.5%
 - i. New Jersey, 69.4%
 - j. Oregon, 69.3%
- (4) The 10 worst states (all below 50%) in ascending order were:

- a. Alaska, 31.2%
- b. Kansas, 42.4%
- c. Michigan, 43.4%
- d. Oklahoma, 48.1%
- e. Arkansas, 48.1%
- f. Wisconsin, 45.4%
- g. Indiana, 48.6%
- h. Ohio, 48.8%
- i. Illinois, 48.9%
- j. Colorado, 49.1%

CONCLUSIONS

Based upon the results of this study, the following four conclusions can be reasonably drawn. First, there was pronounced adverse impact in 6-year graduation rates for black as compared to white students at the national level. The Black student graduation rate at U.S. four-year colleges and universities in 2016 was 35.9%, only 59% of the corresponding white rate of 60.8%. Furthermore, despite concerted efforts to increase Black student 6-year graduation rates, the percentage in 2016 (35.9%) represented a substantial decrease since 2013 (41.0%) of 5.1 percentage points (Musu-Gillette *et al.*, 2016). Clearly, additional attention and significant funding are called for to address this huge disparity.

Were these adverse impact results to have occurred in a hiring situation, members of the aggrieved party (black students) could bring legal action against the accused organization and compel them to demonstrate that the college education system is valid and fairly applied to everyone or risk punitive action. While U.S. higher education has often been described as the envy of the world, the widespread systemic adverse impact against black students is unacceptable and must be rectified.

Second, adverse impact for black students was found in 48 of 51 (94%) states and the District of Columbia. Once again, concerted effort and sufficient funding are required in the overwhelming majority of states to attack the adverse impact problem.

Third, three states showed no adverse impact in black 6-year graduation rates: Maine, New Hampshire, and Rhode Island. These top performing states can provide useful information to other states in terms of strategies to minimize/eliminate adverse impact for black students.

Fourth, the 4/5ths rule can provide a useful common metric to assess adverse impact that is well accepted, simple to calculate, and easy to understand. It allows governmental units and educational institutions to quickly evaluate adverse impact among their student populations and enables a direct assessment of how minority student success compares to that of white students.

LIMITATIONS

The following limitations should be taken into consideration when interpreting the results of this study. First, the findings are only applicable to 4-year educational institutions, and not community colleges, trade schools, or graduate programs. Second, the data set utilized addressed 6-year graduation rates for the period 2010-2016. Thus, the extent to which these findings are applicable to other time periods is unknown. Third, this study did not address potential causal explanations for the observed variation in calculated state figures on adverse impact in 6-year Black student graduation rates.

SOLUTIONS

National efforts to improve Black student post-secondary academic outcomes

With passage of the Higher Education Act in 1965, President Johnson and Congress prioritized equal access to post-secondary opportunities for all students and provided new initiatives to support students from low income families. One of the Act's initiatives that is still widely utilized is the Federal Work-Study Program. In 1972, the Higher Education Act was reauthorized and The Pell Grant Program was created to provide college funding to students from low income families.

The U.S. Department of Education, in a report entitled, *Fulfilling the Promise, Serving the Need: Advancing Opportunity for Low-Income Students* (2016), outlined the major Federal Programs and their impact. For example, Pell Grant Funding was provided to over 8 million students in 2016, with an average award of \$3,700 per year for college enrollment. The Congressional Budget Office (2017) documented that two-thirds of Black college students received Pell Grants each year.

Another impactful federal program has been the American Opportunity Tax Credit (ATOC) of 2015, which provides a tax credit of up to \$2,500.00 per year for four years to low income families to support college enrollment. In 2016, the ATOC was taken by 10 million families, with an average reduction in taxes paid of \$1,800.00.

These and other federal programs are designed to make college enrollment and degree completion attainable goals for Black students, as well as other students of color and those from low income families. This federal financial assistance is critical in motivating disadvantaged students to enroll in college and persist until graduation.

The widespread problems associated with first-year remedial courses for Black students discussed above have led to concerted national efforts to formulate corrective strategies (Complete College America, 2016). Perhaps the most successful approach is called corequisite remediation, in which at-risk students are initially placed in gateway college classes (i.e., English, Math) with remedial/coaching/tutoring services made immediately available to any underperforming student. Complete College America reported results for Five States (Colorado, Georgia, Indiana, Tennessee, and West Virginia) and found that the use of corequisite remediation tripled the number of underprepared students who complete introductory gateway classes in English and Math. These very positive results should translate into higher persistence and graduation rates for Black students, as well as other disadvantaged students.

Finally, a promising model, aimed at high-risk students has attracted national attention. It is known as Re-Imagining the First Year (RFY) and was developed by the American Association of State Colleges and Universities (2016). Building on Dweck's (2006) pioneering work on "growth mindset" and the research on "sense of belonging," RFY attempts to dramatically transform the first year experience for low income, first generation, and students of color to increase retention/persistence and ultimately improve graduation rates. The four program pillars are: (1) institutional intentionality, (2) curriculum, (3) faculty and staff, and (4) student success. Over 44 educational institutions have actively participated in the program nationally. Preliminary research results with RFY have been very encouraging (Broda *et al.*, 2018; Crank *et al.*, 2019; Daniel, 2020) and strongly suggest the potential for significantly increasing graduation rates for at-risk students, according to Daniel.

Clearly, work is being done to improve college graduation rates for Black students. A uniform method of measuring and analyzing graduation data would provide useful data for these efforts. Based on this study, the authors make the following recommendations:

1. There are three states that are already doing a credible job in facilitating the success of black college students. From this pool, best practices and evidence-based approaches should be identified and broadly shared with all post-secondary schools.
2. The U.S. Department of Education should initiate a nationwide effort to address the pronounced adverse impact documented for black students in 6-year graduation rates. National leadership is sorely needed in identifying the fundamental causes of the adverse impact, formulating best practices solutions, and motivating corrective efforts through the use of substantial financial incentives and/or disincentives. For instance, documented progress in reducing adverse impact could result in increased federal funding, while a lack of improvement could result in decreased federal funding. Similar efforts at the state level could be focused on individual colleges and universities, with educational funding levels contingent upon documented progress.
3. Future research would be helpful in the following areas: (1) an examination of national (and state) adverse impact in Black 6-year graduation rates over time, (2) an assessment of adverse impact in Black student graduation rates in community colleges, trade schools, and masters/Ph.D. programs, (3) a theoretical and empirical evaluation of potential causal factors affecting state adverse impact rates, and (4) an identification and definition of “best practices” in states with little or no adverse impact in Black 6-year graduation rates.

APPENDIX

Table 1

Six-Year Graduation Percentage (2010-2016)¹ and Adverse Impact on Black Students For U.S. 4-Year Colleges and Universities

Nation/States	All Students Combined 6-Yr Graduation %	White Students Only, 6-Yr Graduation %	4/5 Rule Cut-off (.8 X White %)	Black Students Only, 6-Yr Graduation %	Adverse Impact and 4/5 Rule Comparison
Nation	54.90%	60.8%	48.6%	35.9%	YES 35.9% < 48.6%
Alabama	48.0	60.4%	48.3%	34.7%	YES 34.7% < 48.3%
Alaska	24.3%	28.2%	22.6%	8.8%	YES 8.8% < 22.6%
Arizona	28.8%	59.5%	47.6%	33.4%	YES 33.4% < 47.6%

Arkansas	43.7%	50.1%	40.1%	24.1%	YES 24.1%<40.1%
California	62.5%	66.7%	53.4%	39.7%	YES 39.7%<53.4%
Colorado	50.1%	54.8%	43.8%	26.9%	YES 26.9%<43.8%
Connecticut	66.4%	70.6%	56.5%	46.4%	YES 46.4%<56.5%
Delaware	51.5%	59.1%	47.3%	30.9%	YES 30.9%<47.3%
District Of Columbia	74.6%	83.5%	66.8%	55.8%	YES 55.8%<66.8%
Florida	46.6%	53.5%	42.8%	32.0%	YES 32.0%<42.8%
Georgia	36.8%	41.7%	33.4%	25.7%	YES 25.7%<33.4%
Hawaii	47.2%	41.0%	32.8%	31.4%	YES 31.4%<32.8%
Idaho	43.3%	45.7%	36.6%	30.4%	YES 30.4%<36.6%
Illinois	60.3%	66.6%	53.3%	32.6%	YES 32.6%<53.3%
Indiana	55.4%	58.0%	46.6%	28.2%	YES 28.2%<46.6%
Iowa	67.1%	69.4%	55.5%	39.3%	YES 39.3%<55.5%
Kansas	51.8%	56.7%	45.4%	24.3%	YES 24.3%<45.4%
Kentucky	48.2%	51.0%	40.8%	30.2%	YES 30.2%<40.8%
Louisiana	49.9%	55.9%	44.7%	36.6%	YES 36.6%<44.7%
Maine	57.6%	51.7%	41.4%	53.0%	NO 53.0%>41.4%
Maryland	66.6%	75.2%	60.2%	43.90%	YES 43.9%<60.2%
Massachusetts	71.7%	72.7%	58.2%	57.1%	YES 57.1%<58.2%
Michigan	51.6%	56.9%	45.5%	24.7%	YES 24.7%<45.5%
Minnesota	63.5%	65.2%	52.2%	43.0%	YES 43.0%<52.2%
Mississippi	51.1%	62.7%	50.2%	35.4%	YES 35.4%<50.2%

Missouri	56.6%	60.4%	48.3%	34.9%	YES 34.9% < 48.3%
Montana	45.6%	47.1%	37.7%	32.3%	YES 32.3% < 37.7%
Nebraska	59.2%	62.0%	49.6%	34.1%	YES 34.1% < 49.6%
Nevada	33.8%	39.0%	31.2%	20.7%	YES 20.7% < 31.2%
New Hampshire	68.3%	68.2%	54.6%	63.5%	NO 63.5% > 54.6%
New Jersey	65.4%	70.7%	56.6%	49.1%	YES 49.1% < 56.6%
New Mexico	41.7%	47.7%	38.2%	34.4%	YES 34.4% < 38.2%
New York	62.5%	67.5%	54.0%	42.3%	YES 42.3% < 54.0%
North Carolina	61.4%	68.0%	54.4%	46.3%	YES 46.3% < 54.4%
North Dakota	49.0%	52.6%	42.1%	28.6%	YES 28.6% < 42.1%
Ohio	54.0%	57.8%	46.2%	28.2%	YES 28.2% < 46.2%
Oklahoma	44.3%	49.5%	39.6%	23.8%	YES 23.8% < 39.6%
Oregon	60.8%	62.2%	49.8%	43.1%	YES 43.1% < 49.8%
Pennsylvania	66.2%	68.7%	55.0%	45.1%	YES 45.1% < 55.0%
Rhode Island	69.2%	69.8%	55.8%	57.9%	NO 57.9% > 55.8%
South Carolina	56.6%	64.5%	51.6%	38.4%	YES 38.4% < 51.6%
South Dakota	48.6%	52.7%	42.2%	32.3%	YES 32.3% < 42.2%
Tennessee	50.7%	56.1%	44.9%	37.6%	YES 37.6% < 44.9%
Texas	51.9%	60.6%	48.5%	34.6%	YES 34.6% < 48.5%
Utah	47.9%	50.9%	40.7%	30.6%	YES 30.6% < 40.7%
Vermont	64.5%	64.6%	51.7%	48.8%	YES 48.8% < 51.7%
Virginia	65.4%	71.0%	56.8%	47.0%	YES 47.0% < 56.8%

Washington	57.8%	59.3%	47.4%	41.2%	YES 41.2% < 47.4%
West Virginia	43.7%	46.2%	37.0%	23.9%	YES 23.9% < 37.0%
Wisconsin	55.7%	58.3%	46.6%	28.2%	YES 28.2% < 46.6%
Wyoming	54.2%	56.9%	45.5%	32.0%	YES 32.0% < 45.5%

¹Source: U.S. Department of Education, National Center For Education Statistics, Integrated Post-Secondary Education Data System (IPEDS)

Table 2

Black Student 6-Year College Graduation Rates as a Percentage of White Student Rates for the Nation and Individual States¹

Nation/States	Black Student Percentage Divided By White Student Percentage
Nation	59.0%
Maine	102.5%
New Hampshire	93.1%
Rhode Island	83.0%
Massachusetts	78.5%
Hawaii	76.6%
Vermont	75.5%
New Mexico	72.1%
Washington	69.5%
New Jersey	69.4%
Oregon	69.3%
Montana	68.6%
North Carolina	68.1%
Tennessee	67.0%
District Of Columbia	66.8%
Idaho	66.5%
Virginia	66.2%
Minnesota	66.0%
Connecticut	65.7%
Pennsylvania	65.6%
Louisiana	65.5%
New York	62.7%
Georgia	61.6%
South Dakota	61.3%

Utah	60.1%
Florida	59.8%
California	59.5%
South Carolina	59.5%
Kentucky	59.2%
Maryland	58.4%
Missouri	57.8%
Alabama	57.5%
Texas	57.1%
Iowa	56.6%
Mississippi	56.5%
Wyoming	56.2%
Arizona	56.1%
Nebraska	55.0%
North Dakota	54.4%
Nevada	53.1%
Delaware	52.3%
West Virginia	51.7%
Colorado	49.1%
Illinois	48.9%
Ohio	48.8%
Indiana	48.6%
Wisconsin	48.4%
Arkansas	48.1%
Oklahoma	48.1%
Michigan	43.4%
Kansas	42.9%
Alaska	31.2%

¹6-Year Graduation Percentage for Black Students, Divided by 6-Year Graduation Percentage for White Students

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