

Table 1. Top 30% Representation by Race/Ethnicity

Race/Ethnicity 2012-2013 ⁵	Number FAY Assessed in State	Percent in State	Math Top 30 Percent	Math Difference	Reading Top 30 Percent	Reading Difference
Black or African American	122,916	17%	7%	-10% (under-rep)	7%	-10% (under-rep)
Asian	21,304	3%	5%	2% (over-rep)	4%	1% (over-rep)
Hispanic or Latino	45,288	6%	4%	-2% (under-rep)	4%	-2% (under-rep)
White	520,891	71%	81%	10% (over-rep)	81%	10% (over-rep)
Total	734,201	100%				

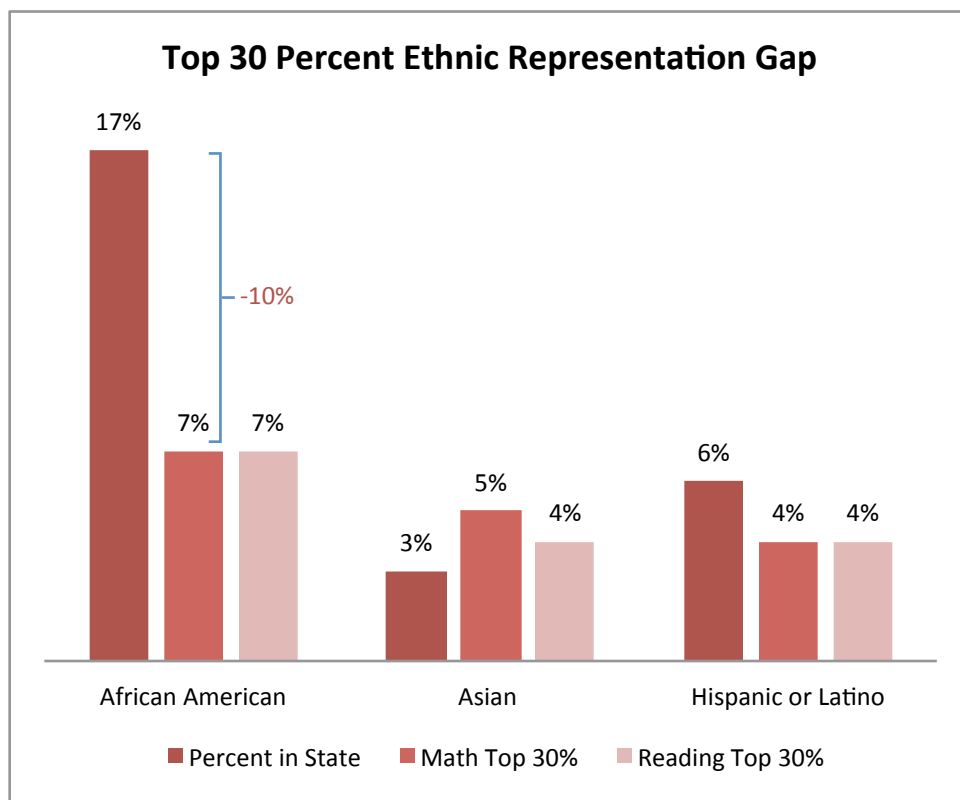


Figure 1. Ethnic representation of students statewide scoring in the Top 30 Percent in Math and Reading

Figure 1 compares the three nonwhite student populations’ percentage of students in the state and in the Top 30 math and reading. White student information is omitted because the large percentage of white students in the state obscures gaps in the other student populations. Compared to the percentage of z-scored students within the state, there are several groups of students overrepresented or underrepresented in the Top 30. African-American students represent 17 percent of all tested students but only 7 percent of the Top 30 students across all grades, leaving a representation gap of -10 percentage points. White students (Table 1) are overrepresented by 10 percentage points.

⁵ Ethnicity numbers are calculated based on numbers of students with non-missing z-scores in math (while exact numbers differ, percentages are the same for reading). “Native Hawaiian or Other Pacific Islander,” though it appears in overall numbers (n=892), has no students with math or reading z-scores. The Total also includes “American Indian/Alaska Native” (7,471 students; 1 percent of state population); and “Two or More Races” (23,074; 2 percent).

Table 2 shows the same information for the Bottom 30 percent of students statewide. African-American students make up 31 percent of the math Bottom 30 and 29 percent of the reading Bottom 30, an overrepresentation of 14 and 12 percentage points respectively (Table 2). MDE has set a goal to achieve equitable distribution, i.e. eliminate the representation gap such that the percentage of African-American students in the Top and Bottom 30 mirrors the 19 percent representation in the state overall.

Table 2. Bottom 30% Representation by Race/Ethnicity					
Race/Ethnicity 2012-2013	Percent in State	Math Top 30 Percent	Math Difference	Reading Top 30 Percent	Reading Difference
Black or African American	17%	31%	14% (over-rep)	29%	12% (under-rep)
Asian	3%	1%	-2% (under-rep)	2%	-1% (under-rep)
Hispanic or Latino	6%	8%	2% (over-rep)	8%	2% (over-rep)
White	71%	56%	-13% (under-rep)	56%	-13% (under-rep)
Total	100%				

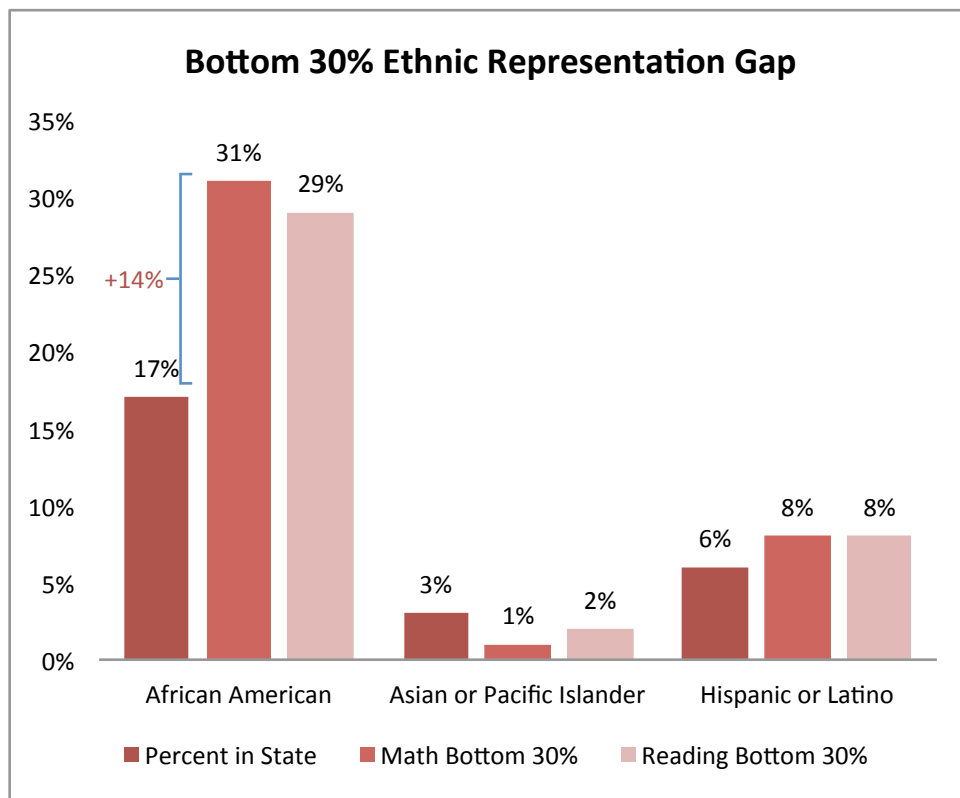


Figure 2. Ethnic representation of students statewide scoring in the Bottom 30 Percent in Math and Reading

Table 3. Top 30% Representation by Race/Ethnicity - Numeric

Race/Ethnicity 2012-2013 ⁶	Number in State	Number in Math Top 30	Number in Math Bottom 30	Number in Reading Top 30	Number in Reading Bottom 30
Black or African American	122,916	15,351	67,106	15,517	63,238
Asian	21,304	10,965	2,613	9,750	4,014
Hispanic or Latino	45,288	13,158	18,220	8,195	18,716
White	520,891	177,634	120,648	175,494	127,213
Total	734,201	219,301	216,365	215,610	220,549

Table 3 presents similar information to Tables 1 and 2, but substitutes actual numbers of students for percentages. The Top and Bottom 30 numbers within each subject are placed side-by-side for comparison. As the table makes clear, the number of students in the Bottom 30 exceeds the number in the Top 30 for African-American and Latino students only. For African-American students, the number in the Bottom 30 is four times greater than in the top. Further, more than half of tested African-American students tested in the Bottom 30 in math and nearly half tested in the Bottom 30 in reading.

Q2. How are 2013 z-scores distributed among African-American students? How does this differ from the distribution of scores among other students statewide?

Distribution within the Top and Bottom 30 is really a result of differences in performance by subgroups of students on the assessments used in the TTB calculation. While the numbers and percentages presented in the previous section provide a useful snapshot of performance at two distinct levels, they obscure the precise distribution of performance within each ethnic group. The box plots used in this section provide more information.

Figure 3 explains the layout of a box plot.⁷

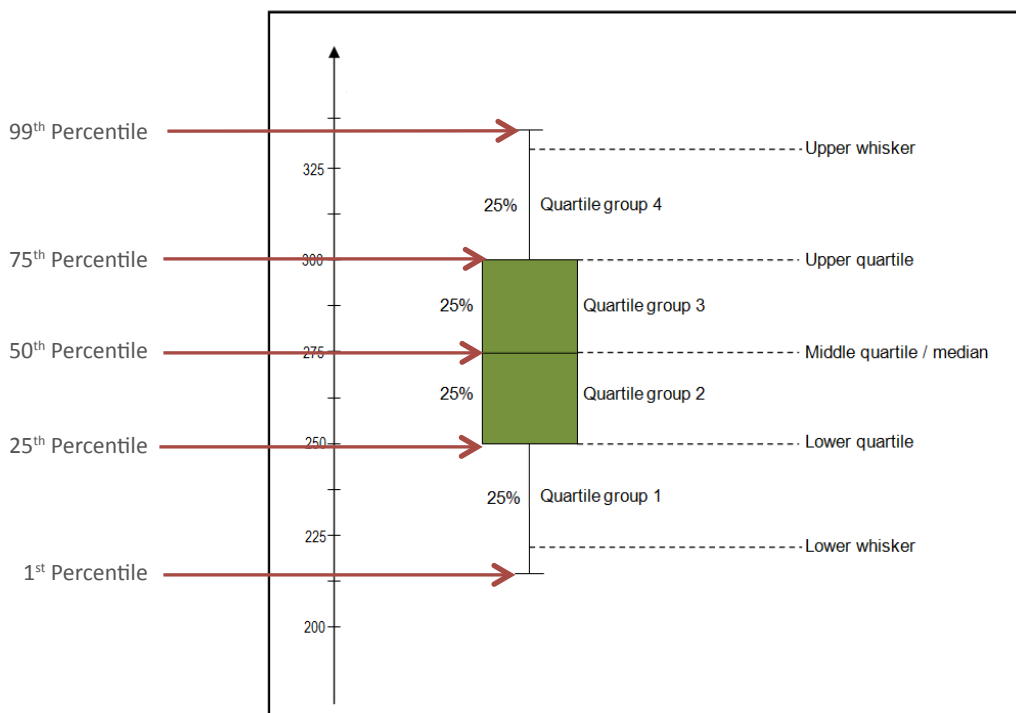


Figure 3. Explanation of box plots

⁶ Ethnicity numbers are calculated based on numbers of students with non-missing z-scores in math (while exact numbers differ, percentages are the same for reading). “Native Hawaiian or Other Pacific Islander,” though it appears in overall numbers (n=892), has no students with math or reading z-scores. The Total also includes “American Indian/Alaska Native” (7,471 students; 1 percent of state population); and “Two or More Races” (23,074; 2 percent).

⁷ Source: http://www.wellbeingatschool.org.nz/sites/default/files/W@S_boxplot-labels.png

Of all African-American students tested in Michigan in 2012-2013:

- o 16% of African-American students attended Priority Schools (29,547 tested students)
- o 11% of African-American students attended Focus Schools (17,094 tested students)
- o 9% of African-American Students attended Reward Schools and (14,206 tested students)
- o 63% of African-American Students attended Non-Labeled Schools (101,054 tested students)

By contrast:

- o 1% of white students attended Priority Schools
- o 15% of white students attended Focus Schools
- o 11% of white students attended Reward Schools
- o 73% of white students attended Non-Labeled Schools

The greatest discrepancy between black and white students is in the percentage attending Priority Schools, the bottom 5% of ranked schools in TTB; much higher percentage of African-American students attended these low achieving schools in 2012-2013. The needs of students and the resources available to supplement their learning are likely very different at each type of schools. If the academic performance of African-American students were raised in priority schools and focus schools alone, nearly 48,000 students could be affected.

- As shown in the statewide achievement distribution graphs, there are 19,985 students with math z-scores capped at -2 (i.e. -2 or below, or lowest possible assessment scores). Of those, 43% (8,499) are African-American students despite the fact that African-American students make up only 18% of the Michigan student population. Simply raising the achievement of the lowest- performing students would have an impact on a significant number of Michigan students.
- There are high-performing African-American students in Michigan as well as high-performing schools with large African-American student populations, but there are many schools with no high-performing black students. There is a moral imperative to determine how to raise achievement quickly at these schools, currently reflected in MDE policy by increased supports to priority schools and investment in research resources specifically targeted at the achievement gap.

The data also suggest avenues for future research and dissemination to the public, as well as to schools and districts to help inform practice. Planned future research includes:

- District statistics similar to the state level statistics, correlations between percentage African-American students and overall achievement scores
- Interactions between economically disadvantaged status and race
- Interactions between subgroups (e.g. African-American and special education; differential male and female performance by gender)
- More specific research on students scoring at -2 and +2 z-scores. For instance, are there patterns in the types of schools at these scores?
- Investigation into resource gaps that contribute to the assessment score gaps that are more readily discernible in state level data
- Continued investigation into practices in schools that have been successful with their African-American students, either as a whole or in preventing or eliminating gaps between groups

The major limitation of this policy brief is that it is limited to analysis of outcome data, and only one form of outcome data (test scores), with no attempt to control for variables like poverty or school level characteristics such as teacher quality or experience, school resources, curricular offerings or practices. It is intended to provide a baseline rather than to identify causes for the gaps in achievement. It is hoped that future research will help to fill this need.

Appendix

Student Achievement Box Plots by Ethnicity Z-Scores for Selected Percentiles Elementary School Math

	African-American	Latino	White	Asian
99th percentile	1.7	2	2	2
75th percentile	0.004	0.3	0.76	1.5
50th percentile (median)	-0.66	-0.32	0.16	0.76
25th percentile	-1.2	-0.9	-0.47	0.004
1st percentile	-2	-2	-2	-1.9
Mean	-0.58	-0.29	0.14	0.68
Standard Deviation	0.89	0.89	0.91	0.98

Student Achievement Box Plots by Ethnicity Z-Scores for Selected Percentiles Middle School Math

	African-American	Latino	White	Asian
99th percentile	1.6	1.9	2	2
75th percentile	0	0.26	0.78	1.7
50th percentile (median)	-0.597	-0.35	0.16	0.95
25th percentile	-1.18	-0.89	-0.47	0.114
1st percentile	-2	-2	-2	-1.8
Mean	-0.57	-0.3	0.14	0.81
Standard Deviation	0.85	0.87	0.92	1.0

Student Achievement Box Plots by Ethnicity Z-Scores for Selected Percentiles High School Math

	African-American	Latino	White	Asian
99th percentile	1.3	2	2	2
75th percentile	-0.22	0.3	0.77	1.7
50th percentile (median)	-0.76	-0.3	0.13	0.9
25th percentile	-1.3	-0.9	-0.5	0.0
1st percentile	-2	-2	-2	-2
Mean	-0.73	-0.32	0.13	0.73
Standard Deviation	0.80	0.87	0.92	1.1

**Student Achievement Box Plots by Ethnicity Z-Scores for Selected Percentiles
Elementary School Reading**

	African-American	Latino	White	Asian
99th percentile	1.8	2	2	2
75th percentile	0.1	0.30	0.76	1
50th percentile (median)	-0.56	-0.31	0.1	0.35
25th percentile	-1.2	-0.95	-0.5	-0.31
1st percentile	-2	-2	-2	-2
Mean	-0.51	-0.3	0.14	0.34
Standard Deviation	0.89	0.90	0.93	0.96

**Student Achievement Box Plots by Ethnicity Z-Scores for Selected Percentiles
Middle School Reading**

	African-American	Latino	White	Asian
99th percentile	1.8	2	2	2
75th percentile	0.13	0.31	0.74	1.2
50th percentile (median)	-0.51	-0.29	0.14	0.48
25th percentile	-1.1	-0.92	-0.50	-0.27
1st percentile	-2	-2	-2	-2
Mean	-0.49	-0.28	0.13	0.43
Standard Deviation	0.9	0.9	0.93	0.99

**Student Achievement Box Plots by Ethnicity Z-Scores for Selected Percentiles
High School Reading**

	African-American	Latino	White	Asian
99th percentile	1.5	1.8	2	2
75th percentile	0.03	0.31	0.78	1.3
50th percentile (median)	-0.57	-0.32	0.10	0.51
25th percentile	-1.1	-0.94	-0.53	-0.36
1st percentile	-2	-2	-2	-2
Mean	-0.53	-0.31	0.10	0.40
Standard Deviation	0.81	0.88	0.95	1.1

