



**National Association
for Music Education**

**2016 NAEP Arts Assessment
Analysis of Music Assessment results**

**Prepared for NAfME
by Adam Grisé, University of Maryland, College Park**

June 9, 2017

Introduction and Context for the 2016 NAEP Arts Assessment

The 2016 NAEP Arts Assessment is a nationally-representative assessment tool designed to measure student skills in visual arts and music. Overseen by the National Assessment Governing Board, the National Assessment for Educational Progress, NAEP, is given in many subject areas on a rotating schedule. The NAEP Arts Assessment is given roughly every 8-10 years, with the most recent prior NAEP Arts Assessment having been administered in 2008. The 2016 assessment was given to 8,800 eighth-graders from 280 schools around the country. Roughly half of the student sample took the visual arts assessment while the other half were given the music assessment. Participating students were assessed in responding to music through a combination of multiple choice and constructed response items. Assessments were scored out of 300 possible points. The average score on the 2016 music assessment was 147 points.

The students in the most recent NAEP music assessment were 44% White, 11% Black, 32% Hispanic, 5% Asian, 1% American Indian/Alaskan Native, and 6% two or more races. Native Hawaiian/Pacific Islanders made up less than one percent of the sample. All race/ethnicity categorizations used in the study were student-reported. This analysis used student eligibility for the National School Lunch program (NSLP) as a proxy for family socioeconomic status. Just under half of the sample population (49%) were eligible for the National School Lunch Program. Forty-three percent were ineligible for the NSLP and the remaining 8% did not report NSLP information. This rate of poverty is just slightly under the national average. Beginning in 2013, 51% of American public school students were eligible for the NSLP. Seven percent of the sample reported to be English Language Learners (ELL) or Limited English Proficiency (LEP). Just over half of the schools in the sample (53%) received Title I funding.

All analyses in this study were completed using the web-based [NAEP Data Explorer](#). The Data explorer provides an online interface for interacting with NAEP results and includes cross tabulation, tests of significance, and regression analyses. In general, statistical significance was considered at an alpha of .05. Due to limitations in the online regression tool, multiple regressions in this study exclude interaction terms. While the NAEP Data Explorer provides a user-friendly avenue for investigating the current state of music educational achievement and participation, further in-depth analyses are certainly called for upon the release of the restricted-use dataset. More robust statistical analyses and the ability to parse out smaller sub-samples may reveal underlying trends, causes, and effects not readily accessible through the Data Explorer.

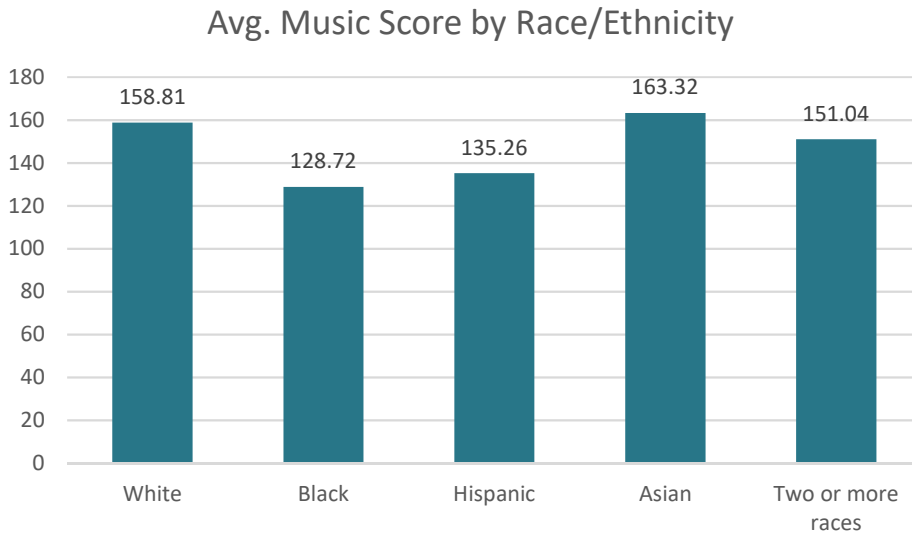
Results

Race/Ethnicity

Broken down by student-reported race/ethnicity, Black students scored, on average, significantly lower ($M = 128.72, p < .05$) than all other racial/ethnic classifications. Additionally, with the exception of Black students, Hispanic students significantly underperformed all other racial/ethnic categories ($M = 135.26, p < .05$). Students of two or more races scored significantly lower ($M = 151.04, p < .05$) than White students ($M = 158.81$) and Asian students ($M = 163.32$).

Scores among White students and Asian students not significantly different at an alpha of .05. Data on American Indian/Alaskan Native and Hawaiian/Pacific Islander students did not meet reporting standards and are therefore excluded from this analysis. Refer to figure 1 for a full breakdown of scores by race/ethnicity.

Figure 1



SES

Students who were eligible for the National School Lunch Program had significantly ($p < .001$) lower scores ($M = 134, SE = 1.1$) than those who were either ineligible for the lunch program ($M = 160, SE = 1.1$) or those for whom NSLP info was not available ($M = 157, SE = 3.1$). Ineligible students and those without lunch info were not significantly different from each other. This roughly 25 point score differential associated with NSLP eligible students suggests that students from lower income families are underperforming on the music assessment in comparison to their more affluent peers.

Self-Image

As an element of student affective disposition toward music, students were asked about their agreement with the statement “I think I have talent for music.” The level of agreement with this statement can be used as an indicator of musical self-image. Unsurprisingly, students who agreed with the statement scored significantly higher ($M = 163$) than those students who were either unsure or disagreed with the statement, suggesting that self-image plays an important part in musical achievement.

Table 1
Agreement with “I think I have talent for music”

Agreement	% of Sample	Avg. Score	SE
Agree	30	163.47	1.44
Not sure	36	145.45	1.32

Disagree	33	135.22	1.23
----------	----	--------	------

SES, Race/Ethnicity, & Self-Image

Based on a regression analysis including SES, race/ethnicity, and musical self-image, all three variables appear to play significant roles in student performance on the NAEP music test. The results of the regression indicated that these three predictors accounted for about a third of the variation in scores ($R^2 = .30$, $F(10, 2,344) = 99.44$, $p < .001$).

Table 2
Effects of SES, race/ethnicity, and self-image on music scores

Predictor	<i>B</i>	<i>B SE</i>	<i>t</i>	<i>p</i>
NSLP Eligibility				
Not eligible	18.11***	1.44	12.55	< .001
Not reported	17.57***	3.22	5.45	< .001
Race/ethnicity				
Black	-25.26***	2.33	-10.83	< .001
Hispanic	-15.65***	1.37	-11.46	< .001
Asian	4.41	2.37	1.86	.07
American Indian/AK Native	-5.34	4.76	-1.12	.27
Native Hawaiian/Pac. Isl.	-18.09*	8.09	-2.24	.03
Two or more races	-5.64*	2.14	-2.24	.01
Talent for music				
Not sure	-15.55***	1.47	-10.58	< .001
Disagree	-27.89***	1.47	-18.98	< .001

Note: The NAEP Data Explorer uses contrast coding reference groups in regression analyses. Reference groups used in this analysis were: NSLP Eligible, White race/ethnicity, and Talent for music “agree.”

* $p < .05$, *** $p < .001$

When controlling for race/ethnicity and self-image, eligibility for the National School Lunch program was associated with about an 18 point deficit in NAEP music scores. Students who were ineligible for the National School Lunch Program outscored eligible students by 18.11

points while those who did not report eligibility outscored eligible students by 17.57 points. These results were significant at an alpha of .001 ($p < .001$). This finding suggests the critical role economic disparities may be playing in musical achievement as measured by the NAEP.

From the same regression, race/ethnicity also played a significant role in NAEP music scores. Being Black was associated with a 25.26 point ($p < .001$) score differential from White students. Similarly, Hispanic students scored lower than White students by 15.65 points ($p < .001$). Native Hawaiian/Pacific Islander ethnicity accounted for an 18.1 point score deficit ($p = .03$) and students reporting two or more races underscored White students by 5.64 points ($p = .01$). In the model, Asian and American Indian racial/ethnic classification accounted for slight differences from White student scores, however, these results were not statistically significant at an alpha of .05.

Finally, musical self-image appeared to have the largest effect within the model. Disagreeing with the statement “I think I have talent for music” accounted for a 27.89 point score deficit on the NAEP music assessment. Similarly, responding “not sure” to the statement accounted for a 15.55 point score deficit. These findings point to a strong correlation between musical self-image and achievement on the NAEP music assessment.

Having an instrument

Unsurprisingly, whether or not students had their own musical instrument diverged along socioeconomic lines. Students who qualified for the National School Lunch Program were significantly less likely ($p < .001$) to have their own musical instrument. While just over half (55%) of higher income students who are not eligible for the NSLP reported having their own musical instrument, only 38% of NSLP eligible students said they had an instrument.

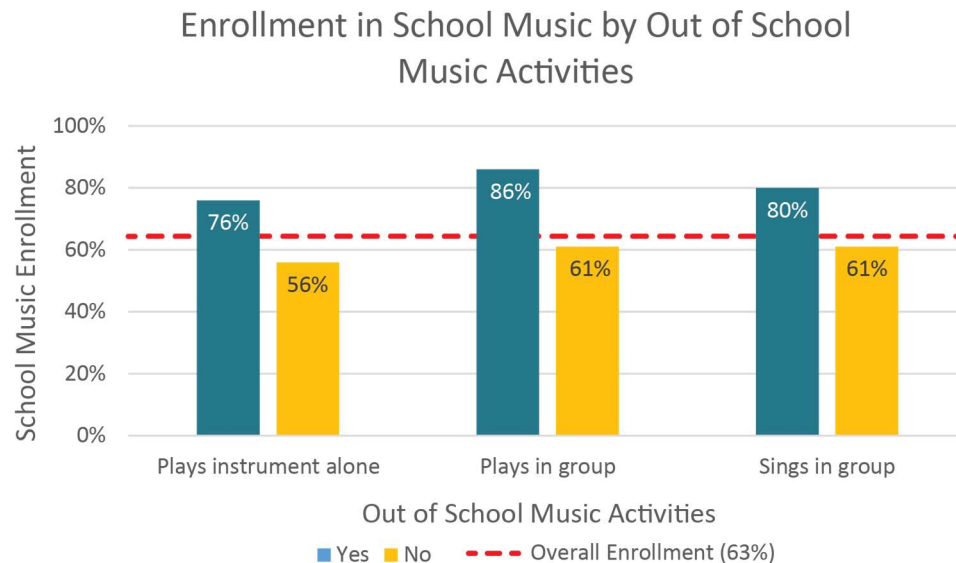
When broken down by race/ethnicity, some interesting differences can be seen in terms of students who do and do not have a musical instrument. Close to two thirds (63%) of Asian students reported having their own musical instrument, while a slight majority (53%) of White students reported having an instrument. Only about a third of Black students (36%) had musical instruments as did 40% of Hispanic students. Students of two or more races were fairly evenly split on having instruments with a statistically insignificant difference between those who did and did not have their own instrument. Data for American Indian/Alaskan Native and Hawaiian/Pacific Islander students did not meet reporting standards for inclusion in the analysis.

When controlling for race/ethnicity and SES, having one's own instrument appears to play a considerable role in NAEP music score achievement. From a regression analysis using these three predictors, having an instrument accounted for 23.04 points on the music assessment ($p < .001$). Students who did not have their own musical instrument, on average, appear to be underperforming on the music assessment.

Results: Out of School Music vs. School Music Participation

School music enrollment among eighth graders in the sample was 63% overall. Students involved in band, orchestra, or other group music activities outside of school were significantly more likely ($p < .001$) than average to be involved in music at their schools. Eighty-six percent of those reporting involvement in an outside of school group musical activity reported involvement in their school's music program. Similarly, 80% of students who reported singing in a group or choir outside of school were enrolled in a music class at their school. Both of these participation rates exceed the 61% involvement in school music by those not participating in out of school group instrumental or vocal musical activities. Just over three-quarters (76%) of students who reported playing an instrument on their own outside of school were involved in school music, in contrast to just over half (56%) of students who stated that they did not play a musical instrument on their own outside of school. These findings suggest a possible correlation between in school music and out of school group musical activity.

Figure 2



English Language Learners & Limited English Proficient

Just over two thirds (68%) of students identifying as ELL or LEP were involved in music classes at their schools. Although this participation level appears slightly higher than the overall 63% school music participation in the sample, this difference did not reach statistical significance. However, the fact that eighth grade ELL and LEP students appear to be participating in school music at rates comparable to (or not significantly different from) non-ELL/LEP students may bode well for inclusion and diversity efforts undertaken by music education in recent years.

Charter Schools & Magnets

Though students in non-charter schools on average outscored those in charter schools by a few points, the difference in scores was statistically insignificant. Interestingly, charter schools run by companies operating multiple schools appeared to outscore standalone charter schools by almost 20 points (152 and 133, respectively). This outcome could possibly be the result of greater resource availability at larger charter school collectives in contrast to the smaller standalone charter schools. Due to limited data availability on charter schools, it is difficult to draw additional distinctions between the various types of charter schools. While music scores appear slightly higher at schools with a special emphasis on music ($M = 155$, $SE = 5.22$), there were no statistically significant differences between music scores at specialized music or arts magnet schools and the rest of the overall population. A possible explanation for this result could be an apparent goal mismatch between performance-intensive music magnet schools and the response-oriented NAEP music assessment. While music magnet students would likely outscore their peers on a musical performance assessment, the 2016 NAEP music assessment did not include a performance assessment. Regardless of the explanation, this finding does underscore the importance of adequate support for *all* music instruction, not just isolated arts and music resource clustering.

Title I

Schools receiving Title I funding may be slightly less likely to offer music than those without Title I funding. While only 4% of schools without Title I funding did not offer music, 12% of those with Title I funding did not offer music. Despite this noticeable discrepancy, the difference was not statistically significant at an alpha of .05 ($p = .13$).

Music Teachers

The type of music teacher at the school did, in some cases, play a significant role in student achievement on the NAEP music assessment. A regression on music scores by type of music teacher, SES, ELL/LEP status, and race/ethnicity ($R^2 = .26$, $F[12, 1,461] = 42.39$, $p < .001$) showed that both full-time and part-time music specialists had a significant positive impact on music achievement scores. When controlling for SES, ELL/LEP status, and race/ethnicity, full-time music specialists accounted for an 11.73 point score increase ($p < .001$) on the music assessment while part-time music specialists accounted for a 4.70 point increase ($p = .04$). Interestingly, artists-in-residence were associated with a small score deficit, however, this effect was not statistically significant within this model. The model does show that, while music specialists may have a positive impact on music scores, the strongest (positive and negative) effects on musical achievement appear to be ELL/LEP status, race/ethnicity, and SES.

Table 3

Regression on music scores by music teacher type, SES, ELL/LEP status, and race/ethnicity

Predictor	<i>B</i>	<i>B SE</i>	<i>t</i>	<i>p</i>
<u>Music taught by</u>				
Artist-in-residence	-3.28	2.20	-1.49	.14
Elementary classroom teacher	4.23	6.40	.66	.51
Full-time specialist	11.73***	2.69	4.37	< .001
Other faculty	7.53	5.43	1.39	.17
Part-time specialist	4.70*	2.23	2.11	.04
Volunteer	6.16	5.94	1.04	.30
<u>NSLP Eligibility</u>				
Not eligible	16.31***	1.34	12.14	< .001
Information not available	18.17***	4.13	4.40	< .001
<u>ELL/LEP Status</u>				
Not ELL/LEP	32.70***	2.81	11.66	< .001
<u>Race/Ethnicity</u>				
Hispanic	-10.22***	1.47	-6.95	< .001
Two or more races	-4.46	2.49	-1.79	.08
Black	-23.03***	1.99	-11.60	< .001
Native Hawaiian/Pacific Islander	-12.51	9.51	-1.32	.19
Asian	9.44**	2.75	3.44	.001
American Indian/Alaskan Native	-1.85	4.83	-.38	.70

Note: The NAEP Data Explorer uses contrast coding reference groups in regression analyses. Reference groups used in this analysis were: NSLP Eligible, “yes” ELL/LEP, and White race/ethnicity.

* $p < .05$, ** $p < .01$, *** $p < .001$

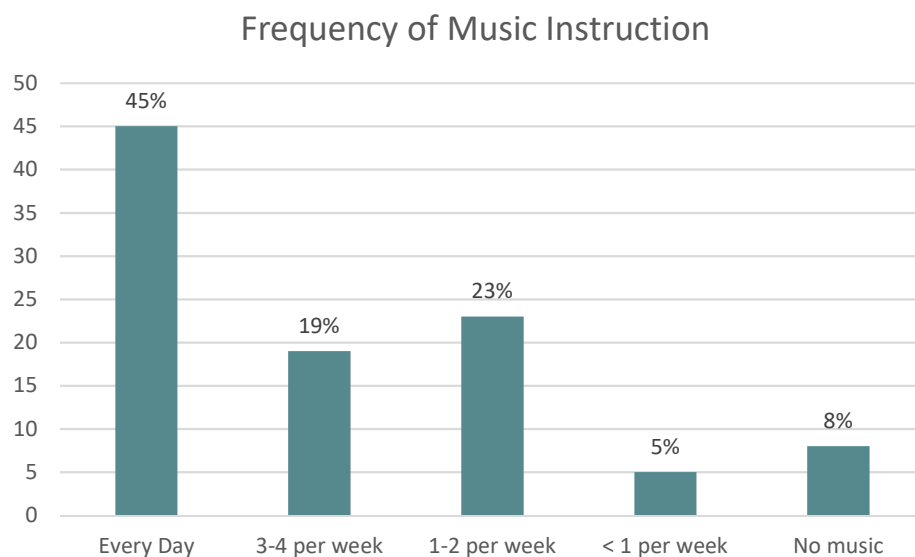
Visiting artists and artists-in-residence

Just under half of schools (48%) reported hosting visiting musical artists throughout the year. Music scores at schools with visiting artists ($M = 148.23$, $SE = 1.97$) were not significantly different from the overall population. Only three percent of schools reported artists-in-residence teaching music classes. Students with artists-in-residence for music teachers had slightly lower NAEP music assessment scores ($M = 140.83$, $SE = 4.01$) than the overall population. This difference was statistically significant at an alpha of .05.

Instructional Frequency

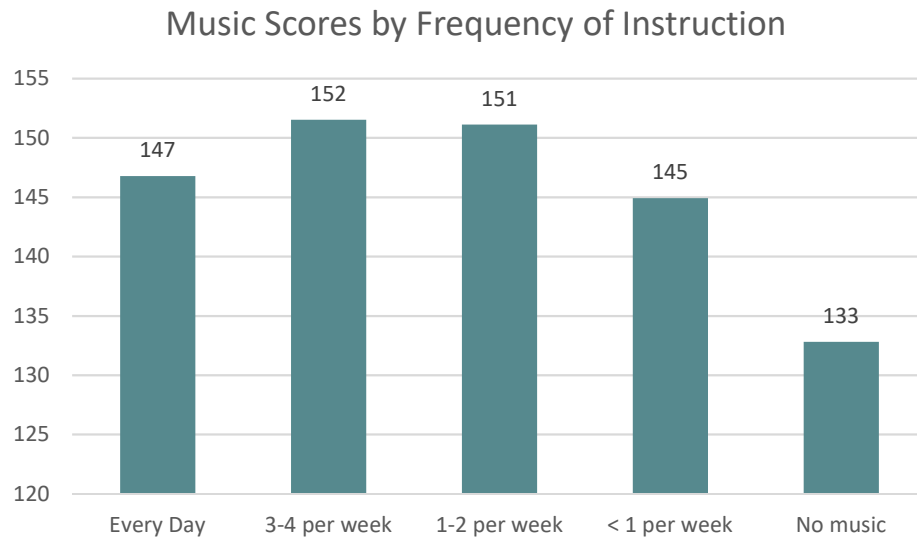
Just under half of schools (45%) offer music every day. Another 19% of schools offer music three to four times per week. Combined, these numbers account for 64% of schools offering what has in the past been described as a “credible” level of music instruction as outlined in the NAfME 2015 Opportunity to Learn Standards. Only 8% of schools did not offer music instruction. Private schools were far more likely than average to fail to offer “credible” music instruction with only 18% reporting offering music at least three times per week.

Figure 3



There doesn't appear to be a strong correlation between instructional frequency and NAEP music scores. Students receiving instruction 1-2 times per week ($M = 151$, $SE = 2.1$), on average, outperformed students who received daily music instruction ($M = 147$, $SE = 1.7$). Students receiving music instruction 3-4 times per week slightly edged out the pack ($M = 152$, $SE = 3.4$), however this difference is statistically equivalent to those receiving 1-2 music classes per week. Students with less than one music class per week scored the lowest of those receiving any musical instruction ($M = 145$, $SE = 5.9$). Unsurprisingly, students not receiving any music instruction had the lowest average NAEP music scores ($M = 133$, $SE = 3.3$).

Figure 4



Conclusion and Next Steps

The data available from the 2016 NAEP Arts Assessment regarding availability and access of participation in our nation’s music education programs is both positive and gives pause. Students continue to perform at the same level as in prior NAEP Arts assessments (2008) on the music responding assessment items, music is offered at the vast majority of middle schools in our nation, and is taken by more than 60% of our nation’s 8th graders. Surprisingly, the NAEP sample found that English Language Learner 8th graders were slightly more likely to be in music classes than native English speakers. Also of positive note was that the majority of the middle schools surveyed offered music at a frequency which meets our 2015 Opportunity-to-Learn Standards. Finally, the data show clearly that having a full-time music educator providing music instruction to students yields positive results in terms of learning in music – even when that measurement of learning is limited to students’ response to music, not performance or creation.

These positive results, however, are heavily overshadowed by the discrepancies in terms of access and equity found in this analysis. Students from backgrounds of poverty and students of color did not perform nearly as well as their peers on the 2016 NAEP, and that finding echoes earlier gaps in terms of ethnic and socio-economic divides found in prior NAEP results and other U.S. Department of Education survey sets, such as the 2008 FRSS survey. In addition, we see that charter and private schools offer less satisfactory music offerings. Private school students, however, still outperformed their public school peers at a statistically significant level, while charter school students performed on a similar level to their district school peers. As we work with a federal administration striving to increase “school choice,” we need to recognize that school choice might mean schooling without high quality music education.

NAfME will continue to work with our research community to better understand the NAEP results, and to share these findings with the larger arts education community. In addition, this information will inform NAfME's policy agenda and will be shared with all relevant stakeholders to inform the agendas of other stakeholders, particularly in the area of increasing access to music education for all children and in how we engage with the school choice movement. If all children deserve a well-rounded education, part of our job will be to insure that a well-rounded education is available regardless of the kind of school, the type of student, or a family's economic status.