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Arts and Attendance: A Further Examination of the Relationship between Arts and Chronic Absenteeism

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Executive Summary

In winter 2018, Metis Associates, an independent research and evaluation firm, was contracted to conduct an initial, large-scale, reconnaissance study to investigate the relationship between the richness of school arts offerings and levels of chronic absenteeism in New York City (NYC) public schools. The study was grounded in previous research that has both found favorable outcomes for students engaged in arts programming and has linked rich arts offerings in schools with positive school climate. Using existing data sources for both arts implementation and school-day attendance, the study focused on one main and three exploratory research questions, addressing both the overall picture of chronic absenteeism and arts implementation in NYC public schools over three academic years (2015-16, 2016-17, and 2017-2018) and the relationship between arts implementation and school-day attendance.

Overall, this initial study found several interesting results that were worthy of further exploration:

- First, it was clear that ***there is a serious problem with chronic absenteeism in the NYC public schools***.
- Arts implementation varied; however, ***the percent of schools implementing a high level of arts increased over the course of the three study years***. Moreover, the analyses showed that some schools that are reducing their chronic absenteeism are also increasing their levels of arts offerings.
- ***Higher arts implementation scores were associated with better student attendance*** (less chronic absenteeism and higher average daily attendance).
- ***Overall, when taking other school-wide factors into account, the connection between arts offerings and school-day attendance was strongest at the elementary school level.***

In 2020, Metis was again contracted to conduct an expansion of the initial study, adding one more year of data to the analyses: 2018-19. To conduct this study, Metis used the same procedures as previously using the 2018-19 data. First, we developed separate arts indices for elementary, middle, and high schools using data collected through Arts Count, an initiative implemented by the NYC Department of Education (NYC DOE) aimed at increasing the accountability for and transparency of arts education in all of the city's public schools Additionally, school-wide attendance data were collected from the NYC DOE and schools were assigned to chronic absenteeism categories based on standard definitions (Chang, Bauer, & Byrnes, 2018). Analyses of the data included categorization and tabulation of arts implementation and chronic attendance bands and basic correlations examining the relationship between arts implementation and school-day attendance. Finally, a set of multiple regression analyses was conducted, which examined the relationship between arts implementation and chronic absenteeism while also taking into account other school-wide factors, such as economic needs index (ENI), school size, and percent of English language learners and special education students, among others.

Consistent with previous findings, the updated study found that, in 2018-19, higher arts implementation scores were associated with better student attendance (less chronic absenteeism and higher average daily attendance) at each of the school levels (elementary, middle, and high). Likewise, lower arts implementation scores were associated with worse student attendance (higher chronic absenteeism and lower average daily attendance) at each of the school levels. Furthermore, when taking into account other school-wide factors, ***arts implementation level was still a significant predictor of chronic absenteeism rates for elementary and middle schools in 2018-19.*** However, ***arts implementation was not a significant predictor of chronic absenteeism for high schools in***

2018-19 (or in any of the four academic years examined).

Overall, the results from this updated study continue to emphasize the strength of the connection between arts offerings and school-day attendance at the elementary school level, and we continue to believe that this important finding suggests action. The results indicate that students who are in schools that have greater access to the arts may be significantly less likely to be chronically absent. Moreover, the most current findings indicate provide strength to the previously inconsistent findings at the middle school level, suggesting that the PK-8 continuum is particularly important with regard to ensuring strong arts offerings.

The limitations of this study are consistent with those stated in initial study:

- As a correlational study, this study was not designed to test causation, and therefore ***limited causal attribution can be made***.
- The ***arts indices were locally developed as part of this study*** and would benefit from validation examination. Moreover, determining a cutoff level based on valid performance measures may lead to a stronger study in the future.
- Lastly, the study was set in the NYC DOE, which is a large, urban setting; therefore, ***the results may not be generalizable to other settings or student populations***.

Based on these limitations, we continue to offer the following suggestions for further research:

- ***Validation of the arts indices***. Each of the arts indices should be validated by assessing the resulting scores against other objective measures of arts implementation in order to ensure that the appropriate criteria and weights are being used. Examples of possible objective measures at the elementary and middle school levels could include the percent of students who apply to screened arts programs in middle or high school. At the high school level it could include the percent of students who pass the high school graduation arts assessments.
- ***Replicate the study in other settings***. It is important to replicate the study in settings outside of NYC in order to determine whether similar results will be evident in suburban and rural settings, as well as with other populations of students.
- ***Look for opportunities that allow for more rigorous study in a natural environment***. Examine the possibility of capitalizing on a naturally-occurring event that will allow for a more rigorous study. For example, if a district begins to phase in implementation of rich arts programming for half of its schools, a natural comparison group may be formed that would allow for the ability to make stronger causal connections between arts implementation and school-day attendance.

Introduction

Current research points to chronic absenteeism as a key impediment to students' academic achievement, increasing the likelihood that children will not be proficient readers by third grade, will fail classes in middle school, and will drop out of high school (Portraits of Change: Aligning School and Community Resources to Reduce Chronic Absence, Attendance Works and Everyone Graduates Center, 2017). Research also points to the power of the arts to improve school culture and climate, increase student engagement, and enhance a host of capacities, including self-confidence, communication, collaboration, and creativity, among others (Wolf & Wolf, 2012; Carroll, 2007).

It stands to reason that, based on the outcomes that have been associated with arts participation, students who have greater access to a rich set of arts experiences are more likely to attend school on a regular basis than those who do not. However, to our knowledge, Metis Associates' recent investigation into the relationship between arts access and school-day attendance was the first large-scale study of its type. For this initial study, Metis used existing data sources for both arts implementation and school-day attendance and identified the extent of arts offerings and the levels of chronic absenteeism in schools. The study examined these relationships at different school levels (elementary, middle, and high school) for the recent academic years (2015-16, 2016-17, and 2017-18).

The Metis study was carried out within the context of the New York City (NYC) public schools. The NYC Department of Education (NYC DOE) provides an ideal context in which to examine the relationship between the level of arts offerings in schools and student chronic absenteeism rates. NYC has the largest public school system in the United States, with more than 1 million students and approximately 1,700 schools. The city has a strong central support system for arts programming through its Office of Arts and Special Projects, with an executive director of the arts, a director of arts accountability, directors of each of four arts forms (dance, music, theater, and visual arts), and borough arts directors, among others who support arts programming. Moreover, the DOE has been carefully tracking arts offerings and student participation in the arts in each of the city's schools as part of its Arts Count initiative for over 10 years. While the city clearly has a rich support system for arts education programming, the level of arts offerings does vary considerably across schools, due to factors such as school size and resources, as well as school priorities.

In 2020, Metis was again contracted to conduct an expansion of the initial study, adding one more year of data to the analyses: 2018-19. To conduct this study, Metis used the same procedures as previously using the 2018-19 data. In the following sections of this report, we provide detailed information about the methods that were used to conduct this study; the findings from analysis of the level of arts implementation and chronic absenteeism across the city, as well as the results from our examination of the relationship between arts and attendance; and a discussion of the findings of the research, as well as limitations of the study and possible next steps for related research.

Literature Review

Chronic absenteeism is a serious problem for schools across America. Student data from the 2015-16 school year showed that approximately eight million students across the country were chronically absent, meaning that they missed at least 15 days of school during the year, and this absenteeism rate had increased from the previous school year (Chang, Bauer, & Byrnes, 2018). Across the state of New York, 21% of students were chronically absent during the 2015-16 school year.

Chronic absenteeism has been associated with academic challenges for students, including a greater likelihood of having reading difficulties, being retained in grade, and dropping out of school (Portraits of Change: Aligning School and Community Resources to Reduce Chronic Absence, Attendance Works and Everyone Graduates Center, 2017). **Moreover, chronic absenteeism is much higher in schools with higher rates of students living in poverty**, regardless of whether these schools are located in urban, suburban, or rural areas. This is particularly distressing since students living below the poverty line may not otherwise have access to the resources they need to make up for lost instructional time, such as tutoring. Altogether, these findings indicate that chronic absenteeism is a pervasive issue in American schools. Indeed, many states have recognized that school attendance rates must be improved, and 36 states and Washington, D.C. have thus included chronic student absenteeism as one of their five accountability measures required by the Every Student Succeeds Act (ESSA) (Jordan & Miller, 2017).

Notably, chronic absenteeism has been associated with deficits beyond academic achievement. One study of elementary school students found that those students who were chronically absent also displayed less developed social-emotional skills (e.g., self-control, interpersonal interactions) as compared to their peers who were not chronically absent (Romero & Lee, 2007). Other research has demonstrated that student absenteeism can cause students to feel less connected to their peers, leading to fewer positive social interactions (Gottfried, 2015). What's more, the impacts of chronic absenteeism are not limited to the absent students alone, but also to their teachers' ability to deliver quality education to all students; that is, when students return to class after an absence, teachers may need to slow or repeat instruction in order to bring absent students up to speed, thus hampering the progress of other students (Gottfried, 2015). High attendance, on the other hand, both ensures that students are engaged in productive activities during the day, and helps foster the habit of attendance that will be important once students enter the workforce (Portraits of Change, 2017). Regardless of the multitude of school initiatives that have been put into place in an effort to bolster student learning, it is abundantly clear that students must attend in order to reap the benefits.

We are currently lacking in clear strategies to address chronic absenteeism; however, improving school climate may serve as an important prevention approach. While increased accuracy and consistency in capturing attendance data have provided a vivid picture of the extent of the absenteeism problem, potential methods of increasing student school-day attendance are less well developed. Portraits of Change (2017) lays out three tiers of support to address the issue of chronic absenteeism: Prevention, Early Intervention, and Specialized Support. The first tier, Prevention, focuses on engaging school climate and positive relationships. School climate may be defined as staff and students' beliefs regarding the safety, connectedness, parental involvement, and resources in their schools (Van Eck, Johnson, Bettencourt, & Johnson, 2017). Though research on the relationship between positive school climate and strong school-day attendance is nascent, one study

including 106 middle and high schools found that attendance rates varied based on how positively students perceived the school climate; that is, schools in which students rated the climate as "negative" had higher rates of chronic absenteeism than did schools where students perceived the climate as "positive" (Van Eck, Johnson, Bettencourt, & Johnson, 2017).

The arts have been connected to positive school climate outcomes (Burton, Horowitz, & Abeles, 1999; Brouilette, 2012), as arts offerings and the integration of arts into the school curriculum have been shown to engage all students, including students living in poverty, students with disabilities, and English language learners (Stevenson & Deasy, 2005; Cawthon, Dawson, & Ihom, 2011; Brouillette, Childress-Evans, Hinga, & Farkas, 2014). One study examining the relationship between arts and school climate found that when an arts integration model was implemented in one school district, students not only demonstrated higher academic achievement, but student disciplinary referrals decreased, and teachers, school staff, students, and parents alike reported improved school climate (Snyder, Klos, & Grey-Hawkins, 2014). Furthermore, some studies have found that teachers reported being in favor of arts integration in their schools because it helped them to feel more enthusiastic about their teaching and to view their students more positively (as cited in Arts Education Partnership, 2004). Other studies have found that the arts may help some students connect with each other, as they take creative risks together and express themselves to their peers (see, for example, Arts Education Partnership, 2004). Moreover, previous research conducted by the late UCLA professor, James Catterall (2009) found that students in arts-rich schools had significantly better academic outcomes than students in arts-poor schools, especially in schools with high proportions of students in poverty.

Altogether, these studies suggest that arts opportunities in schools may help to reduce chronic absenteeism rates, and several studies have provided preliminary evidence that this may be the case. Indeed, one study of Missouri school districts found that districts with higher levels of arts participation demonstrated higher attendance rates as compared to districts with lower levels of arts participation (Scheuler, 2010). Another study of an arts integration model found that students who participated in arts programming in one school system had higher attendance rates (as cited by Criswell, 2017). Yet another study, which looked at the relationship between participation in arts education and school attendance, found that students who did not take any fine arts courses had higher absenteeism than students who were enrolled in at least one fine arts course and that students with low GPAs, or educationally "at-risk" students, who were not enrolled in any fine arts courses had significantly higher absentee rates than students who were in at least one arts course. In another study that examined the influence of fine arts integration (e.g., visual, performance, musical) within traditional academic courses (e.g., English, history, geography), teachers reported that their students were more engaged in class and dedicated to their schoolwork. Further, teachers noted that student attendance increased by 34% over the course of one year after one school enhanced its arts offerings, with students now declaring that they "hate to miss school" (Schubert & Melnick, 1997, p. 10).

Though these studies connecting the arts to school-day attendance are promising, more research is needed, particularly large-scale studies that examine the relationship on a broad scale and across multiple years.

Methods

This updated study uses extant data collected from the NYC DOE to explore the relationship between the level of schools' arts offerings (referred to as "arts implementation") and chronic absenteeism rates. It provides additional data from the 2018-19 school year to supplement the previous study, which used three years of data to examine connections between students' access to the arts and their school-day attendance. As with the initial study, this updated study uses correlational methodology to examine relationships and is therefore not intended to speak definitively to causation. However, it does provide key information about arts implementation, chronic absenteeism, and the relationship between them in NYC public schools. It also points to potential next steps for inquiry. This updated study uses the same research questions that guided the initial study, with the inclusion of one more year of data. Moreover, the data sources have been updated to include 2018-19 data. The research questions, methodology, and analyses remain the same.

Research Questions

The following **main research question** and sub-questions guided this study:

- What is the relationship between the level of schools' arts offerings and chronic absenteeism rates, after accounting for economic need index (ENI) and other school-wide factors?
    - Does the relationship vary by school level (elementary, middle, or high)?
    - Does the relationship vary by year (2015-16 through 2018-19)?

The following **exploratory research questions** were also examined in order to gain contextual information for understanding the results:

- What is the percentage of schools in NYC with high chronic absenteeism rates? How does the chronic absenteeism rate in NYC schools vary by grade level (elementary, middle, or high)?

- What is the percentage of schools in NYC with high levels of arts offerings? How does the level of arts offerings in NYC schools vary by grade level (elementary, middle, or high)?

- What percentage of schools have categorically reduced their chronic absenteeism rate (e.g., from *extreme* to *high*, or *modest* to *low*) and also increased the level of arts offerings (e.g., from *medium* to *high* or *low* to *medium*)?

Data Sources

For this study, the Metis team gathered school-day attendance, arts implementation, and school-wide factor data for all NYC schools during each of four school years (2015-16 through 2018-19).[1] The paragraphs below

[1] For the updated study, we used results from the initial study(2015-18) and conducted the same analyses for the 2018-19 data.

describe these data in greater detail.

- **Arts Implementation Level Data**. Arts implementation data were gathered through the Arts in Schools survey and other NYC DOE data used in the annual Arts in Schools report. These data were used to create an arts index score to indicate each school's level of arts implementation. This index score was used as the measure of "arts richness" in the analyses.[2] Due to differences in the available arts implementation data, as well as those related to city programmatic expectations at various levels, customized indices were developed for each of the three school levels: elementary, middle, and high school. The indices each included arts implementation criteria such as arts courses offered, student participation, numbers of certified arts teachers, availability of arts spaces within the schools, and (for middle and high schools) numbers of arts sequences offered. Index scores ranged from 0-100. Appendix A displays each of the arts indices used, including the criteria that comprise the indices and the weighting assigned to each criterion. Appendix B also provides details about the resulting arts index scores at each of the three levels and for each year studied.

- **School-Day Attendance Data.** School-day attendance data were gathered directly from the NYC DOE. New York State defines chronic absenteeism as missing 10% or more of school days, which would be 18 or more days of school per year based on the New York State mandate of 180 days of school. Furthermore, school-wide chronic absenteeism is typically parsed into bands of low (less than 5% students chronically absent), modest (5-9% students chronically absent), significant (10-19% students chronically absent), high (20-29% students chronically absent), and extreme (30%+ students chronically absent).

- **School-wide Characteristics.** Metis collected school-wide characteristics to control for possible confounding effects in analyses. These included the school's economic needs index (ENI), which is a proxy for poverty level[3], as well as school size, borough, district, percent of English language learners, percent of special education students, percent of students by race/ethnicity (recoded to percent minority), and percent of students in self-contained classrooms.

Procedures

In order to address each of the study's research questions, the following procedures were followed:

First, an **arts index** was calculated for each school for each of the four academic years (2015-16, 2016-17, 2017-18, and 2018-19), using the following steps:

- Arts implementation data gathered through the Arts Count initiative in NYC were reviewed to determine what information was available for public schools at each of the elementary, middle, and high school levels.
- In consultation with the DOE OASP, the Metis team determined the criteria that should comprise the indices at each school level.

[2] It should be noted that these data indicate the quantity of arts offerings and do not delve into the quality of the offerings, which is beyond the scope of this study but would be an important follow-up study to conduct.

[3] The NYC DOE provides a composite score for each school that is calculated based on: the percentage of families eligible for public assistance, the percentage of families living below the federal poverty level, and the percentage of students living in temporary housing. For high school students, if the student has a home language other than English and entered the NYC DOE for the first time within the last four years, then immigration and home language status are factored in the ENI rate as well.

- The criteria were weighted so that each index would total 100 points.
- Data from Arts Count were analyzed, and an arts index score was determined for each elementary, middle, and high school in NYC for each of the three study years. Appendix A displays the detailed arts indices used at each school level, and Appendix B provides summary statistics about the resulting data from the indices.
- Schools were then assigned to arts implementation categories (high, medium, and low), as appropriate. Cutoff scores for levels of arts implementation were empirically determined across the three years for which arts indices were calculated. To determine cutoff scores, schools' arts index scores were ranked. Schools ranking in the 33rd percentile or lower were identified as *low* arts schools, schools ranking between 34th and 65th percentiles were identified as *medium* arts schools, and schools ranking in the 66th percentile or higher were identified as *high* arts schools.

Next, **school-level chronic absenteeism rates** were determined, as follows:

- School-wide attendance data were requested from the NYC DOE for each of the study years.
- Schools were assigned to chronic absenteeism categories (low, modest, significant, high, and extreme) using the percent of students who were chronically absent over the course of the year (see above for the accepted definitions of these categories, which we used in our analyses).

Once calculated and verified, the schools' arts index and chronic absenteeism data were **compiled into a dataset** that also included other school-wide characteristics (such as ENI and others, as above). Each public elementary, middle, and high school in NYC was included in the spreadsheet if it had data for at least one of the four study years.

Data Analyses

Descriptive data of schools' chronic absenteeism rates and arts index were categorized and tabulated, allowing for visual inspection of the relationship between schools' chronic absenteeism rates and their level of arts implementation. Appendix C provides quick examination of arts implementation and chronic absenteeism bands, with separate tables showing the average arts index scores by chronic absenteeism bands, as well as chronic absenteeism bands by arts index categories. Following the categorization and tabulation of the data, correlation coefficients were calculated to determine the relationship between arts index scores and chronic absenteeism rates, as well as raw average daily attendance rates. Multiple regression analyses were then conducted to determine the predictive value of the level of arts implementation and the percent of chronic absent students in NYC schools while controlling for possible confounding demographic characteristics. For these analyses, chronic absenteeism rates were entered as the outcome variable in regression models that included arts index scores and other school-wide data including ENI, school enrollment, and the proportions of English language learning, minority, special education, and self-contained classroom students as predictors. Separate models were developed for each school level (elementary, middle, and high)[4], as well as each year under study, for a total of twelve (12) models.

[4] Note that multi-grade schools (e.g., K-8, K-12, 6-12 schools) were included in the descriptive data tables with data from the relevant grades included. That is, data from K-8 schools, for example, were included in both elementary for grades K-5 and for middle schools for grades 6-8. However, data from these schools were removed from the regression analyses, which focused only on elementary, middle, and high schools.

Findings

The sections below describe the key findings of the updated study, which includes findings from the initial analyses as well as the additional study year: 2018-19. Results are arranged according to the research questions, including both the exploratory (presented first) and main research questions. The exploratory questions present the overall picture in NYC public schools with regard to both chronic absenteeism and the level of arts implementation over the four academic years that were examined. The main research question presents the results of basic correlations and regression analyses examining the relationship between arts implementation and chronic absenteeism.

The Picture in NYC Public Schools

Chronic Absenteeism

What is the percentage of schools in NYC with high chronic absenteeism rates? How does the chronic absenteeism rate in NYC schools vary by grade level (elementary, middle, or high)?

Table 1 displays the percent of schools at each level that had high chronic absenteeism rates[5] during each of the four study years. As shown in the table, chronic absenteeism rates are largest for high schools, followed by middle schools and then elementary schools. Rates are fairly consistent across the four academic years at the high school level, with more pronounced upward trends at the elementary and middle school levels. Overall, **more than 60% of the city's schools had high chronic absenteeism rates** during each of the four academic years studied, with approximately two thirds of the schools falling into this category in the two most recent years examined.

Table 1. Percent of NYC Schools with High Chronic Absenteeism Rates[5]

School Year	School Level			
	Elementary	Middle	High	Overall
2015-2016	48.5%	53.5%	80.5%	60.1%
2016-2017	53.3%	56.4%	81.4%	63.4%
2017-2018	57.6%	61.3%	82.9%	66.5%
2018-2019	59.3%	59.8%	82.5%	66.8%

[5] For the purpose of this analysis, "high chronic absenteeism rate" was defined as 20 percent or more students chronically absent within a school (including both high [20%-29%] and extreme [30%+]).

Arts Implementation

What is the percentage of schools in NYC with high levels of arts offerings? How does the level of arts offerings in NYC schools vary by grade level (elementary, middle, or high)?

Table 2 shows that **approximately one-third of the city's schools had high levels of arts offerings each year**, as measured by the locally-developed arts index, with 36.5% of the schools falling into this category by 2018-19. These results are by design, as the arts implementation levels were determined by examining the distribution of arts index scores across the first three years of the study and dividing them into three equal parts, each containing a third of the schools. However, note that by 2017-18, arts offerings appear to be trending upward at the middle and high school levels.

Table 2. Percent of NYC Schools with High Levels of Arts Offerings

School Year	School Level			
	Elementary	Middle	High	Overall
2015-2016	36.7%	39.6%	34.2%	33.7%
2016-2017	41.1%	37.9%	38.4%	36.9%
2017-2018	42.4%	40.9%	37.8%	38.0%
2018-2019	37.5%	44.5%	38.1%	36.5%

What percentage of schools have reduced their chronic absenteeism rate (e.g., from extreme to high, or modest to low) and also increased the level of arts offerings (e.g., from medium to high or low to medium)?

Table 3 displays the percentages of NYC schools that have reduced their chronic absenteeism rates during three one-year intervals. As the table shows, there have been increases each year in the percentage of schools reducing their chronic absenteeism rates. Also notable, as shown in Table 4, **many of the schools that are reducing their chronic absenteeism are also increasing their levels of arts offerings**. This is particularly true at the high school level from 2017-18 to 2018-19.

Table 3. Percent of NYC Schools that Reduced their Chronic Absenteeism Rates

School Year	School Level		
	Elementary	Middle	High
2015-16 to 2016-17	3.5%	6.0%	4.5%
2016-17 to 2017-18	5.3%	8.6%	6.4%
2017-18 to 2018-19	8.4%	13.3%	9.2%

Table 4. Percent of NYC Schools Increasing Arts Offerings and Reducing Chronic Absenteeism

School Year	School Level		
	Elementary	Middle	High
2015-16 to 2016-17	17.4%	20.7%	4.5%
2016-17 to 2017-18	29.6%	23.3%	7.7%
2017-18 to 2018-19	19.7%	17.2%	22.6%

The Relationship between Chronic Absenteeism and Arts Implementation

What is the relationship between the level of schools' arts offerings and chronic absenteeism rates in NYC schools, after accounting for ENI and other school-wide factors? Does the relationship vary by school level (elementary, middle, or high)? Does the relationship vary by year (2015-16 through 2018-19)?

Given that the arts indices were calculated based on school level, the main research question, which explores whether there is a relationship between schools' arts offerings and their chronic absenteeism rates, was examined separately for each of the three school levels (elementary, middle, and high). We first calculated basic correlations (without taking other school factors into account) to examine the relationship between attendance and arts implementation. Each of Tables 5, 6, and 7 (for elementary, middle, and high school, respectively) shows two separate types of correlations: 1) the extent to which the percent of chronically absent students is correlated to a school's arts index score, and 2) the extent to which a school's raw attendance rate is correlated to its arts index score. In each case, the data are shown for the four study years: 2015-16, 2016-17, 2017-18, and 2018-19.

As the tables show, all of the correlations are statistically significant and are related in the predicted direction. That is, the percent of chronically absent students in a school is negatively correlated with its arts index score (i.e., ***the higher the arts index score, the lower the proportion of chronically absent students***). Additionally, raw attendance rates are positively correlated with arts index scores (i.e., ***the higher the arts index scores, the higher the raw attendance rates***).[6]

Table 5. *Elementary School* Correlational Tables: Chronic Absenteeism and Raw Attendance by Arts Index Score

School Year	N Schools	Pearson R[7]	Statistically Significant?
Percent Chronically Absent by Arts Index Score			
2015-2016	836	-0.15	Yes
2016-2017	836	-0.14	Yes
2017-2018	844	-0.14	Yes
2018-2019	838	-0.11	Yes
Raw Attendance Rate by Arts Index Score			
2015-2016	836	0.16	Yes
2016-2017	836	0.16	Yes
2017-2018	844	0.16	Yes
2018-2019	838	0.12	Yes

Table 6. *Middle School* Correlational Tables: Chronic Absenteeism and Raw Attendance by Arts Index Score

School Year	N Schools	Pearson R	Statistically Significant?
Percent Chronically Absent by Arts Index Score			
2015-2016	507	-0.24	Yes
2016-2017	494	-0.23	Yes
2017-2018	487	-0.26	Yes
2018-2019	472	-0.30	Yes
Raw Attendance Rate by Arts Index Score			
2015-2016	507	0.24	Yes
2016-2017	494	0.23	Yes
2017-2018	487	0.27	Yes
2018-2019	472	0.30	Yes

[6] It should be noted that while all the analyses are statistically significant and do show a clear trend in the predicted direction, the correlation coefficients are rather small, suggesting that statistical significance may be driven by the large sample size.
[7] The Pearson R is the correlation coefficient. It may range from -1 to +1, with larger values (either positive or negative) indicating stronger relationships between the variables.

Table 7. *High School* Correlational Tables:
Chronic Absenteeism and Raw Attendance by Arts Index Score

School Year	N Schools	Pearson R	Statistically Significant?
Percent Chronically Absent by Arts Index Score			
2015-2016	439	-0.16	Yes
2016-2017	430	-0.19	Yes
2017-2018	426	-0.19	Yes
2018-2019	420	-0.24	Yes
Raw Attendance Rate by Arts Index Score			
2015-2016	439	0.12	Yes
2016-2017	430	0.15	Yes
2017-2018	426	0.17	Yes
2018-2019	420	0.20	Yes

Next, a set of regression analyses was conducted, which examined the relationship between arts implementation and chronic absenteeism[8] while also taking into account other school-wide factors, such as ENI, school size, and percent of English language learners and special education students, among others. Table 8 shows these results for each of the school levels and for all four school years examined. As the table shows, even when taking into account other school-wide factors, ***arts implementation level was still a significant predictor of chronic absenteeism rates for elementary schools in all four years. It was also a significant predictor of chronic absenteeism rates for middle school in 2017-18 and 2018-19.*** These analyses demonstrated statistically significant negative relationships. That is, the higher the arts implementation, the lower the rates of chronic absenteeism. However, when taking into account other school-wide factors, ***arts implementation was not a significant predictor of chronic absenteeism for high schools during any of the four academic years that we examined, nor for middle schools in the first two years included in the analysis: 2015-16 and 2016-17.***

Table 8. Results of Multiple Regression Analyses

School Level	2015-16	2016-17	2017-18	2018-19
	Beta weights[9]			
Predicting percentage chronically absent				
Elementary	-0.064*	-0.065*	-0.039*	-0.054*
Middle	NS	NS	-0.069*	-0.131*
High	NS	NS	NS	NS

* Denotes that arts index is a statistically significant predictor
NS Denotes that arts index is not a statistically significant predictor

[8] These analyses focused on chronic absenteeism only, rather than examining both chronic absenteeism and raw attendance rates.
[9] Beta weights are statistical values that indicate the unique strength of relationship between a predictor and criterion, after controlling for the presence of all other predictors.

Discussion

Summary of Findings

This study updates our initial preliminary investigation of the relationship between chronic absenteeism rates and the richness of public schools' arts offerings using an additional year of data (2018-19). This study was implemented in NYC, which is home to the largest school system in the US and has a decade's worth of systematic data on arts implementation, which enabled us to conduct a large-scale, reconnaissance investigation. The premise that there may be a relationship between arts and attendance is supported by previous research linking reduced chronic absenteeism to positive school climate, which, in turn, has been linked to high arts implementation. Additionally, a few recent, small-scale studies have found positive relationships between high arts implementation and strong student attendance.

The results provided in this report include both the initial findings which focused on three school years (2015-2018) and the updated findings, which includes the addition of 2018-19 data. The study used existing data sources for both arts implementation and school-day attendance to examine three exploratory research questions, which addressed the overall picture of both chronic absenteeism and arts implementation in NYC public schools, and one main research question, which examined the relationship between arts implementation and student attendance. Overall, this study had several key findings. First, it is clear that there is a serious problem with chronic absenteeism in the NYC public schools. Approximately half to two thirds of all elementary and middle schools and over 80% of all high schools in NYC had high chronic absenteeism rates for each of the four years studied. Arts implementation varied as well, with approximately one third of all schools implementing a high level of arts over the course of the four study years, with slight upward trends at the middle and high school levels. Moreover, the analyses showed that some schools that are reducing their chronic absenteeism are also increasing their levels of arts offerings.

Analyses pertaining to the main research question yielded important and interesting results. Each of the correlations, including all grade levels and study years—and for both chronic absenteeism and raw school attendance—were statistically significant and in the expected direction. That is, the study found that higher arts implementation scores were associated with better student attendance (less chronic absenteeism and higher average daily attendance) and, likewise, lower arts implementation scores were associated with worse student attendance (higher chronic absenteeism and lower average daily attendance). These findings should be carefully considered. On one hand, it must be noted that the correlation coefficients were fairly low, and statistical significance may have been largely driven by the large sample sizes; however, on the other hand, the fact that the results were consistent across each of the school levels and years—and for both ways that attendance was examined (i.e., chronic absenteeism rates and raw attendance rates)—is highly notable and deserving of further investigation. Moreover, the patterns that were identified in the initial study were maintained for the most recent year of data examined.

Overall, when taking other school-wide factors into account, the connection between arts offerings and school-day attendance remains strongest at the elementary school level. As noted in our initial study, this important finding suggests action, as the results indicate that students who are in schools that have greater access to the arts may be significantly less likely to be chronically absent. Given that the connection between

arts access and school-day attendance is strongest at the elementary school level, while acknowledging that these findings are not causal in nature, they do suggest that close attention be paid to schools' offerings at this level. Unfortunately, given the large number of students and strained resources, many elementary schools offer students sporadic opportunities to take arts classes throughout their elementary school grades. Moreover, unlike at the middle and high school levels, the NYSED guidelines do not require that arts teachers at the elementary school level be certified. These results provide key indication, however, that increased opportunity to engage in arts experiences at the elementary school level may mitigate the issue of chronic absenteeism, which in turn, may address a host of social and academic achievement issues.

Results at the middle school level suggest that there may be a relationship between arts implementation and chronic absenteeism. In our initial study, we found inconsistent results, with only one of the three years showing significance. Interestingly, however, in the updated study, we found that there was a significant relationship at the middle school level in 2018-19, indicating that two of four years examined—the two most recent years--were significant. We recommend that these findings be further explored.

The updated study confirms that results at the high school level continue to be least compelling overall. The very high rates of chronic absenteeism in high schools may factor into the limited findings at this level. It also may be that the arts index for high school should be better refined with regard to the indicators used and the weights assigned.

Study Limitations

Given that the updated study used the same methodology as the initial study, the same limitations must be acknowledged:

- Perhaps most importantly it should be noted that this is a correlational study. ***This study was not designed to test causation, and therefore limited causal attribution can be made***. It may be that there are other causes that are related to both arts implementation and school-day attendance that underlie the relationship between them. The regression analyses attempt to take these into account, but a randomized assignment design would allow for stronger assessment of whether there is a causal relationship between arts implementation and school-day attendance.
- The arts indices were locally developed as part of this study. They were created based on arts indices that the NYC DOE uses for the purpose of supporting low-arts implementing schools across the city. However, the indices created for this study included considerably more variables in order to allow for greater variation across schools. This was useful for this study; however, in the future, ***the indices would benefit from validation examination.*** Moreover, the cutoff levels (high, medium, and low arts implementation) were determined empirically by dividing the schools into thirds according to their index score. Determining a cutoff level based on valid performance measures may lead to a stronger study in the future.
- Lastly, while the NYC DOE provided an excellent school system to investigate these questions, ***the results found in this large, urban setting may not be generalizable to other school districts***, such as those in suburban or rural settings. In the future it would be beneficial to conduct similar studies in other settings.

Suggestions for Further Research

Based on the limitations of this study, as discussed above, we offer the following suggestions for further research:

- ***Validation of the arts indices***. Each of the arts indices should be validated by assessing the resulting scores against other objective measures of arts implementation in order to ensure that the appropriate criteria and weights are being used. Examples of possible objective measures at the elementary and middle school levels could include the percent of students who apply to screened arts programs. At the high school level it could include the percent of students who pass the high school graduation arts assessments.
- ***Replicate the study in other settings***. It is important to replicate the study in settings outside of NYC in order to determine whether similar results will be evident in suburban and rural settings, as well as with other populations of students.
- ***Look for opportunities that allow for more rigorous study in a natural environment***. While it is unlikely that it will be possible to conduct a randomized control trial study to examine whether there is a causal relationship between arts implementation and school-day attendance, it may be possible to capitalize on a naturally-occurring event that will allow for a more rigorous study. For example, if a district begins to phase in implementation of rich arts programming for half of its schools, a natural comparison group may be formed that would allow for the ability to make stronger causal connections between arts implementation and school-day attendance.

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Appendix A: Arts Implementation Indices

Elementary

Arts index for elementary is a composite score using portion of arts disciplines provided out of total grade offered, arts instructional hours per discipline, number of arts discipline with at least one full-time or part-time certified arts teacher, number of cultural arts organization partners, number of pull-out student participation, number of disciplines to which physical space is devoted, and number of external funders to supplement regular budget.

	Operational Definition	Data Source	Indicator Index Scoring	Points assigned
Elementary School Grades				
Arts Disciplines Provided				
Number of arts disciplines provided to any grade 1-5	Provides dance, music, theater, and visual arts to any grade 1-5	Arts Survey	Y/N by grade for each discipline Tally total Ys and divided by total grades offered (0-4)	35
Arts Instructional Hours				
Number of arts disciplines meets NYS requirement	Provides 46.5 hours to grades 1-3 and 23.25 hours in grades 4-5 in each arts discipline	Arts Survey	Raw hours for all disciplines per grade Total hours / total disciplines requirement Recategories average	30
Certified Arts Teacher				
Certified arts teacher	Number of arts discipline has a certified arts teacher	Arts Survey	0 = no certified arts teachers 2.5 = a certified arts teacher in one arts discipline 5 = a certified arts teachers in two arts discipline 7.5 = a certified arts teachers in three arts discipline 10 = a certified arts teachers in four arts discipline	10
Cultural Arts Organizations				
Partnered with a cultural arts organization	Partners with at least one cultural arts organization	Arts Survey	0 = not partnered with a cultural arts organization; 3 = partnered with one cultural arts organization 6 = partnered with two arts cultural organization; 9 = partnered with at least three arts cultural organization	9
Pull-out student participation		Arts Survey	1 point per discipline, no media	4
Physical space devoted to discipline		Arts Survey	1 point per space	5
Proportion of external funds to supplement regular budget		Arts Survey	1 point per external funder	7

Middle

Arts index for middle schools is a composite score using portion of arts disciplines provided out of total grade offered, portion of students received at least two different arts disciplines over the course of 6th to 8th grade, number of certified arts teacher in two arts disciplines offered, number of cultural arts organization partners, number of disciplines to which physical space is devoted, number of external funders to supplement regular budget, and number of discipline with three-year sequence offered in school.

	Operational Definition	Data Source	Indicator Index Scoring	Points assigned
Middle School Grades				
Arts Disciplines Provided (Minimum Requirement)				
Number of arts disciplines provided to any grade 6-8	Provides dance, music, theater, and visual arts to any grade 6-8	STARS Data	Y/N by grade for each discipline Tally total Ys and divided by total grades offered (0-4)	30
NYSED MS Arts Requirement				
NYSED MS Arts Requirement	100% of students in school receive at least two different arts disciplines over the course of 7th and 8th grade by a CT	STARS Data	Use proportion of students in school received at least two different arts disciplines over the course to 8th grade by a CT	25
Certified Art Teachers				
Certified Arts Teacher (full-time or part-time)	At least two certified arts teacher in two arts disciplines provided in grades 7 and/or 8	HR Data/Arts Survey	0 =no certified arts teacher in arts disciplines provided 5 =one certified arts teacher in arts disciplines provided 10 = at least two certified arts teacher in two arts disciplines provided	10
Cultural Arts Organizations				
Partnered with a cultural arts organization	Partners with at least one cultural arts organization	Arts Survey	0 = not partnered with a cultural arts organization; 3 = partnered with one cultural arts organization 6 = partnered with two arts cultural organization; 10 = partnered with at least three arts cultural organization	10
Physical space devoted to discipline			2 points per space	10
Proportion of external funds to supplement regular budget			1 point per external funder	7
Offers 3 year sequence			2 points per discipline, no media	8

High

Arts index for high schools is a composite score using portion of arts disciplines provided out of total grade offered, portion of students received at least two credits in one arts discipline during the school year, number of certified arts teacher in two arts disciplines offered, number of cultural arts organization partners, number of disciplines to which physical space is devoted, number of external funders to supplement regular budget, number of disciplines offered, and whether at least one sequence of six or more credits is offered.

	Operational Definition	Data Source	Indicator Index Scoring	Points assigned
High School Grades				
Arts Disciplines Provided by Certified Arts Teacher				
Certified arts teacher	Number of arts discipline has a certified arts teacher	Arts Survey	0 = no certified arts teachers 5 = a certified arts teacher in one arts discipline 10 = a certified arts teachers in two arts discipline 15 = a certified arts teachers in three arts discipline 20 = a certified arts teachers in four arts discipline	20
Number of Arts Disciplines Provided				
Number of Arts Disciplines Provided	Provides four arts disciplines	STARS Data	Y/N by grade for each discipline Tally total Ys and divided by total grades offered (0-4)	20
NYSED HS Arts Requirement				
NYSED HS Arts Requirement	100% of students in school receive at least two credits in one arts discipline by certified arts teacher in the 2015-16 school year	STARS Data	Proportion of students in school received at least two credits in one arts disciplines by certified arts teacher	25
Cultural Arts Organizations				
Partnered with a cultural arts organization	Partners with at least one cultural arts organization	Arts Survey	0 = not partnered with a cultural arts organization; 3 = partnered with one cultural arts organization 6 = partnered with two arts cultural organization; 10 = partnered with at least three arts cultural organization	10
Physical space devoted to discipline			2 points per space	10
Proportion of external funds to supplement regular budget			1 point per external funder	7
Offers sequence of 6 or more credits			2 points per discipline, no media	8

Appendix B: Arts Implementation Index Score Data

2015-16	Valid N	Mean	Standard Deviation	Maximum	Minimum	Median	Mode
Elementary (grades 1 - 5) level arts index score (range: 0 - 100)	754	41.68	14.52	92.00	.00	43.53	45.00
Middle (grades 6 - 8) level arts index score (range: 0 - 100)	507	32.20	15.81	70.21	.00	31.18	19.00
High (grades 9 - 12) level arts index score (range: 0 - 100)	439	41.81	12.91	80.93	.00	41.50	33.25
2016-17	Valid N	Mean	Standard Deviation	Maximum	Minimum	Median	Mode
Elementary (grades 1 - 5) level arts index score (range: 0 - 100)	754	43.65	14.99	93.00	.00	45.07	20.00
Middle (grades 6 - 8) level arts index score (range: 0 - 100)	494	32.80	15.27	72.31	.00	32.01	57.50
High (grades 9 - 12) level arts index score (range: 0 - 100)	430	44.34	11.15	81.00	.00	43.50	34.25
2017-18	Valid N	Mean	Standard Deviation	Maximum	Minimum	Median	Mode
Elementary (grades 1 - 5) level arts index score (range: 0 - 100)	764	43.43	15.03	89.50	.00	44.93	46.00
Middle (grades 6 - 8) level arts index score (range: 0 - 100)	487	33.71	16.16	73.20	.00	32.12	25.00
High (grades 9 - 12) level arts index score (range: 0 - 100)	426	44.85	10.36	76.00	8.33	43.25	36.25
2018-19	Valid N	Mean	Standard Deviation	Maximum	Minimum	Median	Mode
Elementary (grades 1 - 5) level arts index score (range: 0 - 100)	620	43.29	14.26	88.00	0.00	45.00	47.00
Middle (grades 6 - 8) level arts index score (range: 0 - 100)	333	32.61	15.12	69.18	2.50	31.57	19.00
High (grades 9 - 12) level arts index score (range: 0 - 100)	420	44.59	10.34	80.00	5.50	42.88	36.25

Appendix C: Arts Index and Chronic Absentee Bands

Table C1 provides mean arts index scores[10] by chronic absentee band (low, modest, significant, high, and extreme).[11] Data are provided for each of the three school levels (elementary, middle, and high school) and for each of four academic years (2015-16, 2016-17, 2017-18, and 2018-19) for NYC public schools. Overall, the trend is for schools with higher arts index scores to have lower chronic absenteeism rates—a pattern that is evident across school levels and each of the four academic years examined.

Average Arts Index Scores According to Chronic Absentee Band

Table C1. Average Arts Index Score by Chronic Absentee Band and School Level

School Year	Chronic Absentee Band	School Level		
		Elementary	Middle	High
2015-2016	Low	46.13	34.29	47.75
	Modest	50.40	33.10	48.94
	Significant	45.05	32.57	44.78
	High	38.80	27.01	43.34
	Extreme	37.69	27.97	40.27
	Total	42.20	29.94	41.78
2016-2017	Low	47.58	40.57	43.22
	Modest	52.17	33.44	45.38
	Significant	47.49	36.03	49.10
	High	42.10	27.00	47.25
	Extreme	40.01	28.51	42.80
	Total	44.30	31.11	44.34
2017-2018	Low	53.20	42.90	47.45
	Modest	50.20	37.07	46.73
	Significant	48.94	36.03	47.89
	High	40.78	28.65	47.48
	Extreme	40.56	27.36	43.60
	Total	44.08	31.42	44.85
2018-19	Low	51.15	42.62	33.25
	Modest	48.25	36.39	48.71
	Significant	48.12	37.76	46.39
	High	40.61	30.40	47.16
	Extreme	40.05	27.46	43.41
	Total	43.29	32.61	44.59

[10] Arts indices were developed locally based on arts offerings at the schools and were calculated using NYC DOE data. Separate indices were developed for elementary, middle, and high school. Indices for each of the levels range from 0-100.
[11] Chronic absentee bands were calculated according to accepted practice in the field– Low (0-5%); Modest (6-9%); Significant (10-19%); High (20-29%); Extreme (30%+).

Table C2 provides these same data with the chronic absenteeism bands collapsed into low (including low, modest, and significant) and high (including high and extreme). With the chronic absenteeism bands collapsed, the relationship between chronic absenteeism and level of arts offerings becomes even more apparent.

Table C2. Average Arts Index Score by Chronic Absenteeism and School Level

School Year	Chronic Absenteeism[12]	School Level		
		Elementary	Middle	High
2015-2016	Low	46.46	32.90	46.14
	High	38.22	27.41	41.03
	Total	42.20	29.94	41.78
2016-2017	Low	48.73	35.92	47.83
	High	40.97	27.70	43.78
	Total	44.30	31.11	44.34
2017-2018	Low	49.39	37.29	47.56
	High	40.65	27.95	44.42
	Total	44.08	31.42	44.85
2018-2019	Low	48.29	37.90	46.65
	High	40.28	28.96	44.25
	Total	43.29	32.61	44.59

Chronic Absenteeism by Arts Index Category

Tables C3-C5 provide the number and percent of schools in each of the chronic absenteeism bands (low and high) and in each arts index category (low, medium, and high). Table C3 provides these data for elementary schools, Table C4 for middle schools, and Table C5 for high schools.

Table C3. Number and Percent of Elementary Schools in Each Category

School Year	Chronic Absenteeism[12]	Arts Index Category[13]			
		Low	Medium	High	Total
2015-2016	Low	89 24.20%	138 37.50%	141 38.30%	368 100.00%
	High	186 48.30%	116 30.10%	83 21.60%	385 100.00%
	Total	275 36.50%	254 33.70%	224 29.70%	753 100.00%
2016-2017	Low	70 21.15%	118 35.65%	143 43.20%	331 100.00%
	High	174 41.23%	123 29.15%	125 29.62%	422 100.00%
	Total	244 32.40%	241 32.01%	268 35.59%	753 100.00%

[12] Percent of students chronically absent – Low (0-19%); High (20%+)
[13] Arts Index cutoffs were developed based on the average 33rd & 66th percentiles across the three years

School Year	Chronic Absenteeism[12]	Arts Index Category[14]			
		Low	Medium	High	Total
2017-2018	Low	65 21.17%	90 29.32%	152 49.51%	307 100.00%
	High	191 42.07%	148 32.60%	115 25.33%	454 100.00%
	Total	256 33.64%	238 31.27%	267 35.09%	761 100.00%
2018-2019	Low	62 20.74%	110 36.79%	127 42.47%	299 100.00%
	High	183 39.78%	169 36.74%	108 23.48%	460 100.00%
	Total	245 32.28%	279 36.76%	235 30.96%	759 100.00%

Table C4. Number and Percent of Middle Schools in Each Category

School Year	Chronic Absenteeism[12]	Arts Index Category[13]			
		Low	Medium	High	Total
2015-2016	Low	64 26.56%	75 31.12%	102 42.32%	241 100.00%
	High	112 42.11%	90 33.83%	64 24.06%	266 100.00%
	Total	176 34.71%	165 32.54%	166 32.74%	507 100.00%
2016-2017	Low	47 21.86%	73 33.95%	95 44.19%	215 100.00%
	High	111 39.93%	107 38.49%	60 21.58%	278 100.00%
	Total	158 32.05%	180 36.51%	155 31.44%	493 100.00%
2017-2018	Low	33 17.19%	67 34.90%	92 47.92%	192 100.00%
	High	118 40.14%	97 32.99%	79 26.87%	294 100.00%
	Total	151 31.07%	164 33.74%	171 35.19%	486 100.00%
2018-2019	Low	40 19.80%	58 28.71%	104 51.49%	202 100.00%
	High	105 38.89%	93 34.44%	72 26.67%	270 100.00%
	Total	145 30.72%	151 31.99%	176 37.29%	472 100.00%

[14] Arts Index cutoffs were developed based on the average 33rd & 66th percentiles across the three years

Table C5. Number and Percent of High Schools in Each Category

School Year	Chronic Absenteeism[12]	Arts Index Category[13]			
		Low	Medium	High	Total
2015-2016	Low	17 26.56%	19 29.69%	28 43.75%	64 100.00%
	High	159 42.63%	106 28.42%	108 28.95%	373 100.00%
	Total	176 40.27%	125 28.60%	136 31.12%	437 100.00%
2016-2017	Low	8 13.33%	22 36.67%	30 50.00%	60 100.00%
	High	119 32.16%	127 34.32%	124 33.51%	370 100.00%
	Total	127 29.53%	149 34.65%	154 35.81%	430 100.00%
2017-2018	Low	8 13.79%	24 41.38%	26 44.83%	58 100.00%
	High	130 35.33%	109 29.62%	129 35.05%	368 100.00%
	Total	138 32.39%	133 31.22%	155 36.38%	426 100.00%
2018-2019	Low	14 23.33%	21 35.00%	25 41.67%	60 100.00%
	High	130 36.11%	106 29.44%	124 34.44%	360 100.00%
	Total	144 34.29%	127 30.24%	149 35.48%	420 100.00%