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New Discoveries in High School Arts Participation and the Implications for Equity

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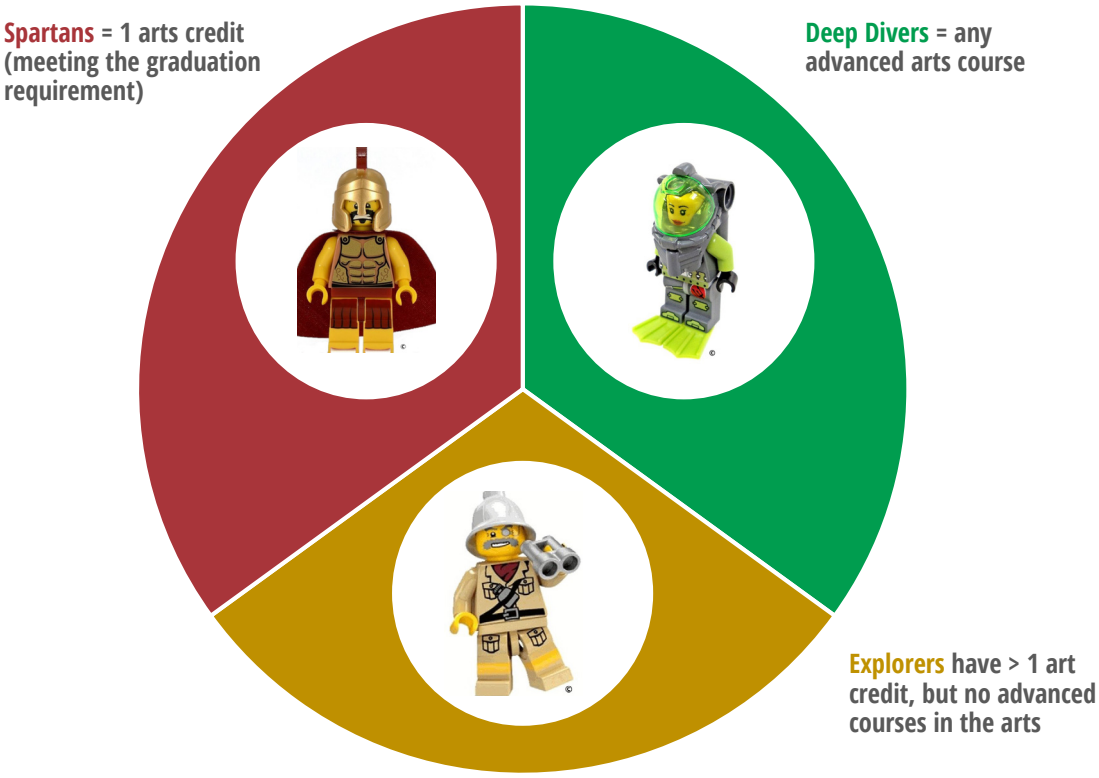
Executive Summary

Traditionally, researchers and policy makers gauge students' participation in the arts by counting course credits earned and categorizing them from low to high. While this method provides a clear accounting of the extent of participation, it fails to capture the more meaningful forces that drive and inhibit participation in the arts at this school level. In this report, we grouped students into three distinct and equally distributed profiles, based on how they enrolled in arts courses during high school, which we named spartans, explorers, and deep divers (Figure 1). Spartans only study the minimum requirement in arts, explorers study more than required but never take an advanced-level arts course, and deep divers take at least one advanced-level course. Students' personal preferences are one factor influencing their arts course enrollment patterns, but there are many other factors. Parents, counselors, remedial course requirements, double blocking, and other scheduling conflicts can also influence course enrollment. These patterns of arts participation represent not just the students, but also the opportunities and barriers they encountered in Austin Independent School District (AISD). Our hope is that understanding the three patterns of arts participation will inform how AISD strategizes for more equitable access to the arts during high school.

This report will show that each of the three patterns of arts participation has a unique profile. The three categories of students tend to come from different backgrounds, have different characteristics, take arts classes in different forms, and have different long-term outcomes. Coincidentally, approximately one-third of high school students belong in each pattern of arts participation (Figure 1). Looking at arts participation in this way adds a new perspective to the discussion about the long-term impacts of arts participation, but it also brings up many new questions about the internal motivations and external systems that encourage and discourage students with respect to studying the arts. For example, who takes only one arts course, and why? Who studies an art form deeply, and why? What about our current system is fostering or inhibiting these participation patterns of arts education, and how can we learn from these patterns to increase access to the arts for all students?

Figure 1.

Approximately one-third of high school students belong in each pattern of arts enrollment.



Source. Course enrollment records
Note. Class of 2017 (*n* = 3219)

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Introduction

While many rigorous studies have examined arts participation at the high school level, there are still gaps in the research, and fundamental challenges to the ways that data are characterized. At both the national level and locally within AISD, plentiful research has shown the positive impacts of arts participation (Andrews et al., 2019; Catterall et al., 2012; Rooney, 2004; Texas Cultural Trust, 2015; Zaff, 2002). Most research on high school arts participation uses a student-level count of credits across all arts disciplines as the input variable. In some studies, that numeric variable might be recoded into "high" and "low" arts participation categories, based on the upper and lower quartiles of those credit counts. On occasion, academic researchers have studied the impact of participation in one particular art form on its own (mostly music) (Rooney, 2004), but rarely does participation in each art form get specific analytic attention.

These research practices are understandable. Researchers usually prefer larger sample sizes in order to have more confidence in their results. This often precludes analyses that are more granular. Therefore, most studies of arts participation combine all courses as if they are the equal. Typically, no distinction is made for the level of arts study or how specific course choices in the arts fit into a student's overall education plan. To make matters more complicated, arts courses are not equally available at every school, and student participation trends are deeply connected to student characteristics, such as race, ethnicity, gender, and economic status. These trends in arts access and arts participation are all deeply woven into the fabric of local cultural differences that may be celebrated as well as ingrained into the detrimental societal inequities that permeate our educational and artistic systems. All these complications, and more, make it more reasonable for researchers and policy makers to aggregate all the data rather than separating the data into smaller groups.

This homogenous treatment of high school arts participation by researchers and policy makers, however, does not quite reflect the lived experience of most students or arts teachers. For some students, arts participation is central to their identity and may have been a part of their life since early childhood; for other students, the arts course may be a "pesky" graduation requirement. Meanwhile, some arts courses are designed as survey courses, while other arts courses are designed for winning competition trophies. Some courses are focused on process, while others are focused on performance. This report will begin to take on the task of looking at arts participation in a more granular fashion. **We will introduce a new way to understand arts participation, based on students' patterns of arts course enrollment during all four years of high school.**

Our findings suggest that the methods normally used to do arts participation research mask important trends concerning equitable participation and long-term outcomes. This new method of measuring arts participation also brings up many new questions about the internal motivation and external systems that motivate students to study the arts. In this paper, we answer some questions about the patterns of arts participation, and we open many more questions for future discovery.

The Different Patterns of Arts Participation

Instead of grouping arts participation into low and high categories, we grouped arts participation based on students' individual arts enrollments over the span of their high school years in the context of their graduation requirements and the level of the arts courses taken. In Texas, the state requires one credit of visual or performing arts for a high school diploma. We first categorized our student groups based on whether or not they exceeded that minumum graduation requirement. We then further categorized our student groups by whether or not they enrolled in an advanced level arts course while in high school. We called these three groups spartans, explorers, and deep divers.

1. Spartans finish high school with only one arts credit. They meet the graduation requirement and that is all.
2. Explorers opt to take more arts credits than required but never take an advanced-level course.
3. Deep divers opt to take more arts credits than required, and take at least one advanced course.

This way of grouping students by their longitudinal enrollment in arts courses requires having 4 years of data on a student. Students who leave the district during high school or join the district during high school must be dropped from this longitudinal approach (see Appendix A for the demographic differences between students in the study and those excluded because of this restriction). School leaders and arts teachers looking for data to inform immediate changes may also benefit from exploring annual arts participation data, which has the advantage of including the arts participation of mobile students. The longitudinal approach used in this report characterizes how arts courses fit into a student's overall high school education and is an ideal way to inform long-term initiatives or policy changes that can optimize equitable arts participation and support students' long-term goals.

[1] The spartans get their namesake from ancient Sparta, which eschewed luxury and comfort as a culture. Today, we use the adjective spartan to describe someone who takes a minimalist, no-frills approach.

Spartans by the numbers

↑ More likely ↓ Less likely
= Equally likely
more arrows = stronger relationship

	Student Characteristics
↓↓↓↓	Female
=	Hispanic
=	Black
=	White
=	English learner
=	Special education
=	Economically disadvantaged
=	First generation to college
=	High GPA in 8th
↓↓↓	Arts participation in 8th

All outcomes below control for the predictive value of student characteristics above

	Outcomes During HS
=	HS attendance
=	HS GPA
↑	Community service
↑	Job outside school

	Outcomes After HS
=	College ready in ELA
=	College ready in math
=	College ready in both
=	Enrolled in college
=	Persisted in college

Note. Arrows above are indicators of statistically significant (p <.05) odds ratios. Positive odds ratios are in green and negative odds ratios are in red. To show negative and positive odds ratios magnitude on the same scale, negative odds ratios were inverted.

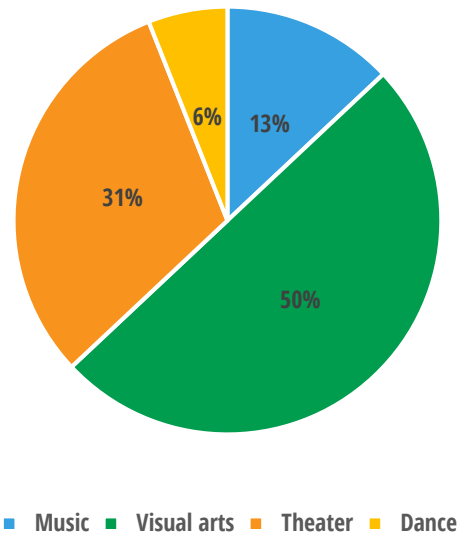
The Spartans

The term *spartan* describes the students who do what is required in the arts to get a high school diploma and no more. In the class of 2017, 35% of students were spartans. Demographically, when spartans were compared with all other students, they could not be characterized by race, ethnicity, economic status, English language status, or special education status, and they had average grades before entering high school. Spartans differed from non-spartans in only two ways: (a) they were slightly more likely to be male and (b) before entering high school, they took many fewer arts classes in 8th grade than non-spartans took. These students were less likely to show interest in the arts, at least during the school day, even before starting high school.

Once in high school, 50% of spartans earned the required credit in visual arts. Specifically, 49% of spartans earned their credit in a course called Art I. Beyond visual arts study, 31% of spartans earned their required credit in theater, 13% earned it in music, and 6% earned it in dance (Figure 2). Spartans, unlike explorers and deep divers, were more likely to have done community service during high school or had a job outside of school. Other than that, their postsecondary outcomes were no different from those of non-spartans. In summary, except for gender representation, they were diverse group of students who had avearge long-term outcomes, whose defining charachteritics only suggest less interest in the arts and possibly, competing priorities with arts participation after school.

Figure 2.

Half of the courses taken by spartans were in the visual arts.



Source. AISD enrollment records
Note. n = 1132

The Explorers

The term *explorer* describes the students who took more arts courses than required but never took an advanced-level course. Some explorers may have been explorers in the truest sense of the word—genuinely curious to experience a diversity of art forms. Some might have preferred to study arts at an advanced level but encountered a barrier along the way. Some explorers might not have genuinely wanted to study the arts but chose the low-level courses to fill elective credits; some might have been placed in arts classes by counselors after not getting their first elective choices. Despite these hypothesized differences in cause, our current analysis did reveal this group has distinct patterns in their student charachterisitics and long term outcomes.

Before high school, explorers took an average amount of arts classes (more than spartans and fewer than deep divers). Unlike the other groups, explorers earned their high school arts credits somewhat evenly across the art forms. Beyond this, our analysis uncovered surprising and worrisome findings about the explorers. We found that explorers were overrepresented by students who qualified for special education services or free/reduced priced lunch, who spoke English as a second language, or were the first generation in their family who might attend college. They were also very likely to be students of color. Unfortunately, these characteristics are all associated with external systemic injustices in today's society and are still predictive of poor academic outcomes, so it was not surprising that explorers also had lower average grades before high school than did the other groups.

Once in high school, explorers earned their arts credit more evenly across the art forms than did spartans or deep divers: 41% of their credits were in visual arts, 25% were in music, 20% were in theater, and 14% were in dance (Figure 3). When compared with non-explorers, they were less likely to do community service, but they also had lower grade point averages (GPAs) and were less likely to be college ready in math, enroll in college, or persist in college. These long-term outcomes for explorers are remarkable because the analysis controlled for the predictive influence of all 10 student characteristics listed in the top of the side bar. These robust analyses suggest that the negative relationship between being an explorer and long-term negative outcomes were likely linked to the educational opportunities available and denied to these students, and not to the students' characteristics themselves.

Explorers by the numbers

The results below compare explorers to non-explorers, unless specified otherwise.

↑ More likely ↓ Less likely
= Equally likely

more arrows = stronger relationship

	Student Characteristics
↑	Female
↑	Hispanic
↑↑	Black
↓↓↓	White
↑↑	English learner
↑↑	Special education
↑↑	Economically disadvantaged
↑↑	First generation to college
↓↓↓	High GPA in 8th
	Arts participation in 8th...
↑↑	Compared to spartans
↓↓↓	Compared to deep divers

All outcomes below control for the predictive value of student characteristics above

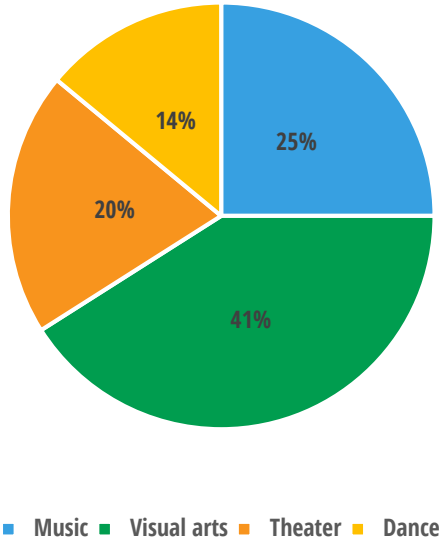
	Outcomes During HS
=	HS attendance
↓↓	HS GPA
↓	Community service
=	Job outside school

	Outcomes After HS
=	College ready in ELA
↓	College ready in math
↓	College ready in both
↓	Enrolled in college
↓	Persisted in college

Note. Arrows above are indicators of statistically significant (p <.05) odds ratios. Positive odds ratios are in green and negative odds ratios are in red. To show negative and positive odds ratios magnitude on the same scale, negative odds ratios were inverted.

Figure 3.

Exploeres took the most evenly distributed amount of arts coures in each art form when compared to spartans and deep divers.



Source. AISD enrollment records
Note. n = 960

Explorers were different from non-explorers in one other important way. While all students in the study group were enrolled in AISD for all 4 years of high school, explorers were more mobile between schools within the district. On average, in 2017, explorers attended 1.2 schools during high school, while both spartans and the deep divers attended 1.1 schools ($p < .05$). We hypothesized that the trends in explorers' student characteristics and the relationship to negative long-term outcomes might be explained by their higher mobility within the district. When we isolated our outcome analysis to the explorers who stayed at one high school (non-mobile), we found that the outcomes of the non-mobile explorers improved a little bit, but the negative trends were still significant (Appendix B). For example, explorers were 26% ($p < .05$) less likely to enroll in college than all non-explorers were. When we limited the analysis to non-mobile explorers, they were still 21% ($p < .05$) less likely to enroll in college than non-explorers were. Mobility seems to exacerbate the issue for explorers, not cause it.

In the class of 2017, 30% of students were explorers. While the proportion of explorers across the district remained fairly constant from the class of 2017 to the class of 2020 (around 30% each year), it is noteworthy that the proportion of explorers varied widely between AISD high schools. Some schools had 8% explorers, and others had only 52% explorers in 2017 and between 11% and 58% in 2020 (Appendix C).

Deep Divers by the numbers

The results below compare deep divers to non--deep divers

↑ More likely ↓ Less likely

= Equally likely

more arrows=stronger relationship

	Student Characteristics
↑↑	Female
↓	Hispanic
↓↓↓	Black
↑	White
↓↓↓	English learner
↓↓↓	Special education
↓↓	Economically disadvantaged
↓↓	First generation to college
↑↑	High GPA in 8th
↑↑↑↑	Arts participation in 8th

All outcomes below control for the predictive value of student characteristics above

	Outcomes During HS
=	HS attendance
↑	HS GPA
=	Community service
=	Job outside school

	Outcomes after HS
=	College ready in ELA
↑↑	College ready in math
↑↑	College ready in both
↑	Enrolled in college
↑↑	Persisted in college

Note. Arrows above are indicators of statistically significant (p <.05) odds ratios. Positive odds ratios are in green and negative odds ratios are in red. To show negative and positive odds ratios magnitude on the same scale, negative odds ratios were inverted.

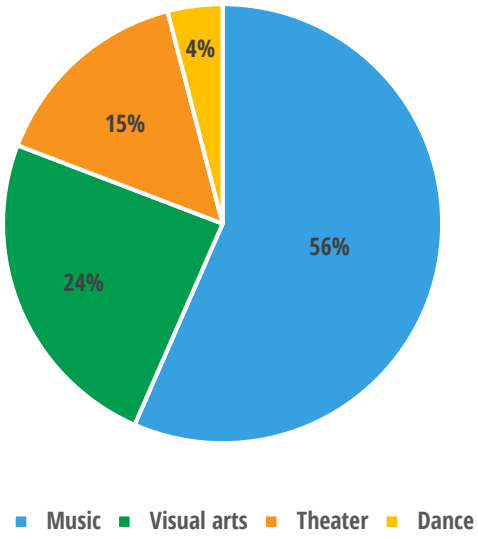
The Deep Divers

The term *deep diver* describes students who took at least one advanced-level arts course during high school. We found that deep divers were overrepresented by characteristics we often associate with external systemic privilege. Compared with the other groups, they were more likely to be non-economically disadvantaged, be White, be native English speakers, have parents who went to college, and not qualify for special education services. Before entering high school, deep divers also tended to get better grades, and not surprisingly, took many more arts classes than non-deep divers. While 35% of students were deep divers across the district, the proportion of deep divers varied widely between different high schools, ranging from 21% to 57% (Appendix C).

Unlike spartans and explorers, who earned more of their credits in visual arts, deep divers earned the majority of their credits in music. They earned 56% of their credits in music, 24% in visual arts, 15% in theater, and 4% in dance (Figure 4). In almost every high school, with the exception of LBJ, the largest field of study for deep divers was music (Appendix D).

Figure 4.

The majority of deep diver's credits were in music.



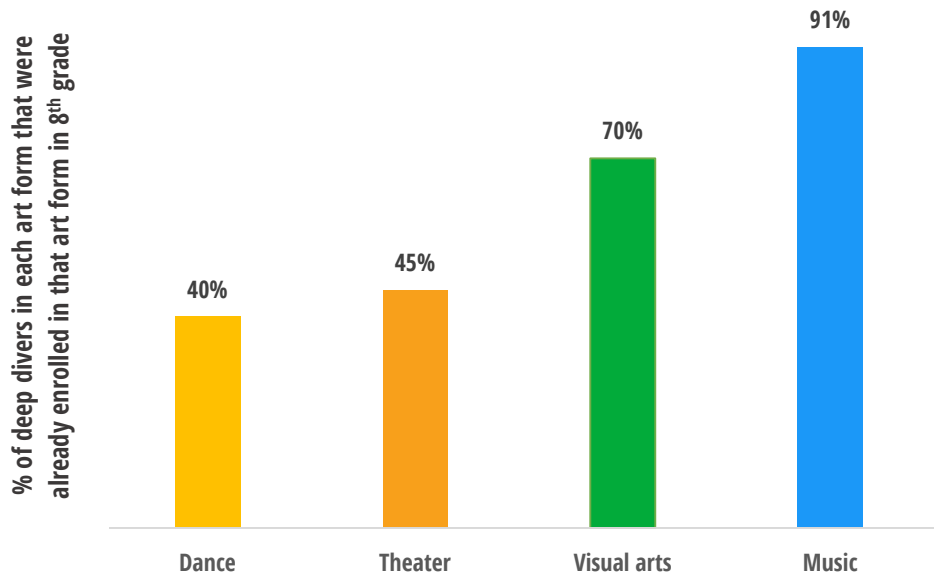
Source. AISD enrollment records

Note. n = 1127

As we tried to identify the distinguishing pattern of the deep diver arts education, we were particularly curious about the art forms they studied and their interest in art before 9th grade. Figure 5, below, shows the percentage of deep divers in each art form who were already enrolled in that art form in 8th grade, confirming that the expected continuity to be a deep diver in one art form is different from the expected continuity in another art form. Ninety-one percent of the deep divers in music were already enrolled in music in 8th grade. Visual arts, theater, and dance all had lower percentages of students with similar levels of continuity. Even within music, there are different types of deep divers. For example, 95% of students who were in jazz band during high school were deep divers, whereas only 44% of students in guitar were deep divers (see Appendix E for more information about deep divers and the subdisciplines of music).

Figure 5.

The vast majority of deep divers in high school music were already enrolled in music in 8th grade.



Source. AISD student enrollment records, 2012–2017

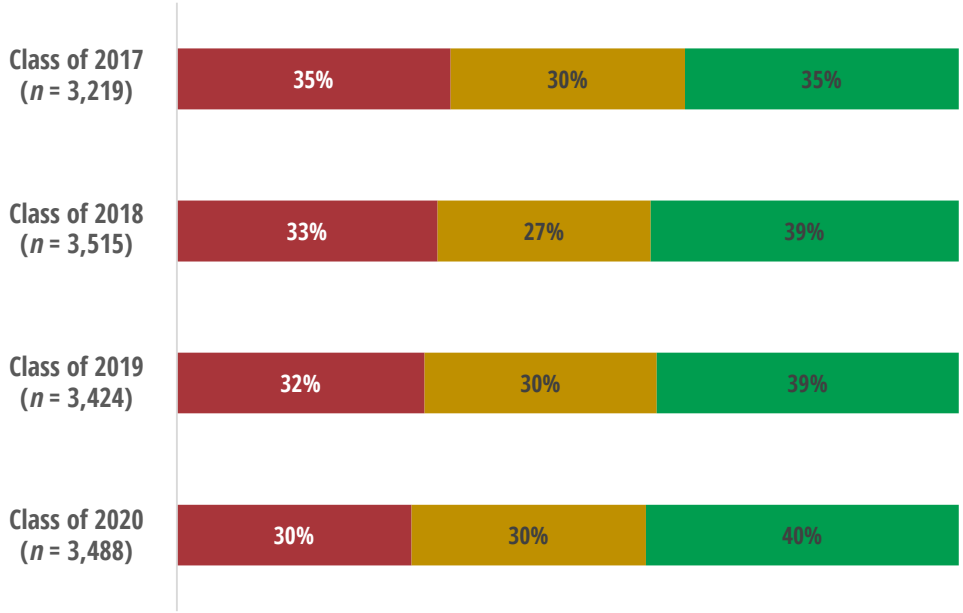
Compared with spartans and explorers, deep divers were less likely to have a job outside of school, had higher GPAs, and were more likely to be college ready in both math and English language arts (ELA). When we took spartans out of the analysis and just compared the two groups who went beyond the arts requirement, deep divers also had comparatively positive results in college enrollment and college persistence. Specifically, when deep divers in visual arts were compared with explorers in visual arts, the deep divers were 69% more likely to be college ready in both ELA and math, and 92% more likely to be college ready in math alone. While many spartans and explorers studied visual arts, we only noticed the positive postsecondary outcomes when those students reached deep diver status.

How Were the Patterns of Arts Participation Distributed?

Approximately one-third of high school students belonged in each pattern of arts participation. For the class of 2017, 35% were spartans, 30% were explorers, and 35% were deep divers. While the focus of the report is on the class of 2017, so we can examine how their postsecondary outcomes were associated with different patterns of arts participation, we also wanted to see how the distribution varied over time, to understand the stability of these patterns. Figure 6 below shows that the distribution of these patterns of arts participation was quite stable. The trend from 2016–2017 to 2019–2020 included slightly more deep divers and slightly fewer spartans, but the proportion of explorers stayed about the same.

Figure 6.

The distribution of spartans, explorers, and deep divers has been fairly stable over the last 4 years, with small shifts toward more deep divers and fewer spartans.



Source. AISD course enrollment records

While the patterns of arts participation were fairly evenly distributed across the district and stable across time, the distribution at each high school campus was not as equal or as stable. For that preliminary analysis at the school level, we limited the students to those who attended the same high school all 4 years, and we looked at the distribution of spartans, explorers, and deep divers at each school. Some of these trends are explicable if we know the school. For example, McCallum High School, which houses a visual and performing arts academy within a neighborhood school, had a high proportion of deep divers. Its non-mobile class of 2017 was composed of 54% deep divers, and the class of 2020 was 67% deep divers. Other trends are not immediately explicable and provoke questions: Why did LASA, the science academy, have a higher proportion of deep divers (57%) than did McCallum, the arts academy, in 2016–2017? Why did LASA's proportion of deep divers then decrease by 10% by 2019–2020? Why did Austin High have such a high proportion of spartans (51%) in 2017, and why did that decrease by 11% by 2020? In general, we want to understand why schools that have similar populations and similar challenges, such as Northeast and Navarro, have such differences in how their students participate in arts courses (Appendix C). These

questions, and more like them, could be the subject of future investigations. If educators can begin to connect which school-level choices and/or characteristics lead to which patterns of arts participation, they will be better equipped to deal with some of these disparities between schools.

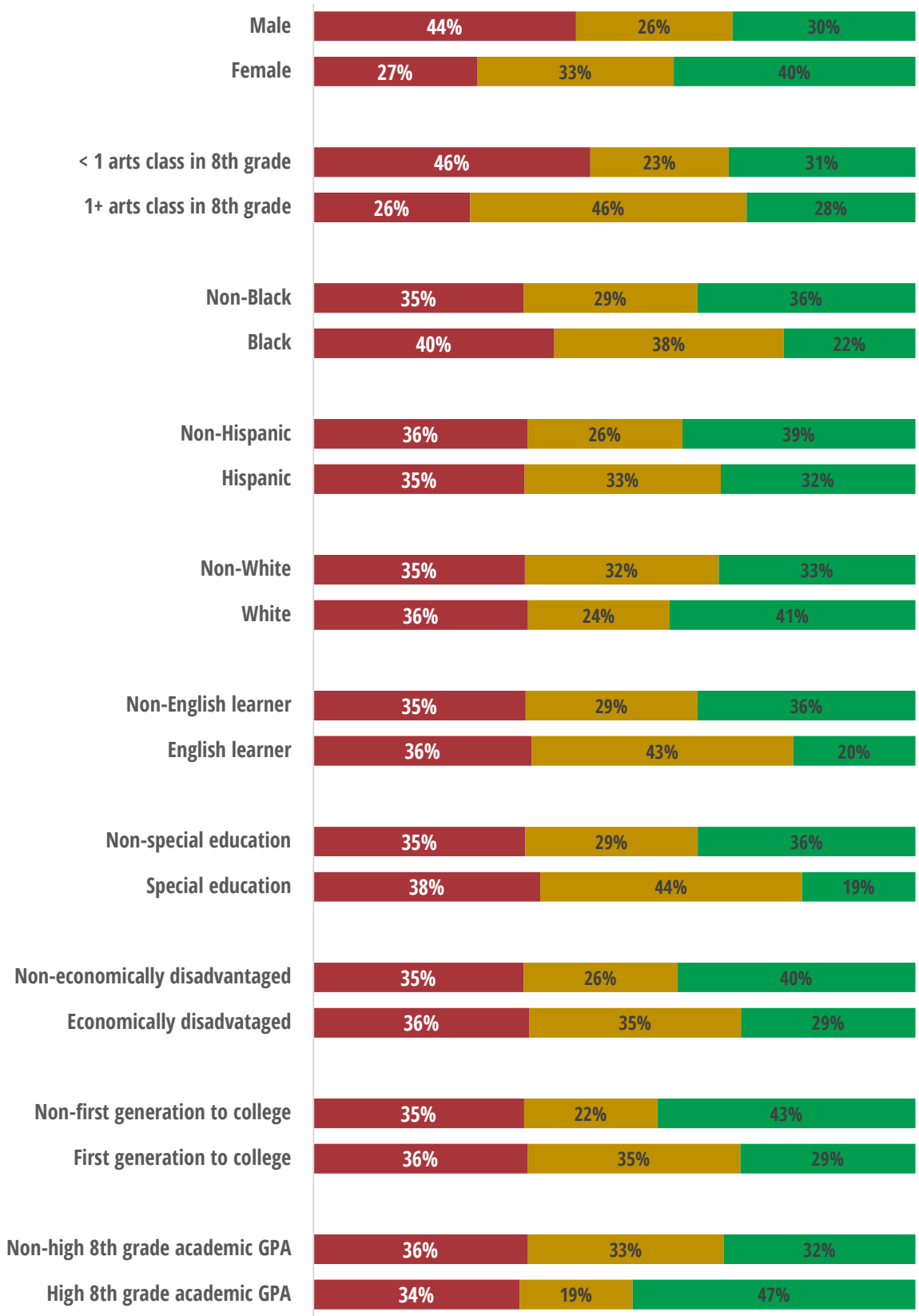
How Were the Patterns of Arts Participation Different, Based on Students' Characteristics?

While the arts, in their purest forms, are theoretically equally available to all people, this study found the three patterns of arts participation were consistently associated with different student characteristics in AISD high schools. Based on prior research that revealed inequities in overall arts participation within the district, we looked at the associations between each of the patterns, as defined in this study, and the following student characteristics: gender, ethnicity, race, English learner status, special education status, economic disadvantage, and first-generation to college in the family. We also wanted to understand the relationship between the the students' patterns of arts partcipation in high school and their middle school arts participation , as well as their academic performance in the core curriculum. To do this, we used the number of arts courses they took in 8^{th} grade and the average grades of their core classes in 8^{th} grade.

We found that explorers were usually more represented than were other students by characteristics we often associate with external systemic disadvantages (i.e., Hispanic, Black, English learners, first-generation college students, classified for special education services, or classified as economically disadvantaged). Deep divers, on the other hand, were consistently associated with characteristics we normally think of as coming with external systemic privileges (i.e., White, non-Hispanic, non-Black, non-English learners, not economically disadvantaged, not special education students, and not first-generation college students). Interestingly, the spartans were quite evenly distributed through the population, except for gender distribution and the amount of previous arts taken (Figure 7).

Figure 7.

While the proportions of spartans was similar across most student characteristics (except gender and prior arts study), the proportion of explorers and deep divers varied by all student characteristics. Disadvantaged statuses consistently have higher proportions of explorers and lower proportions of deep divers.



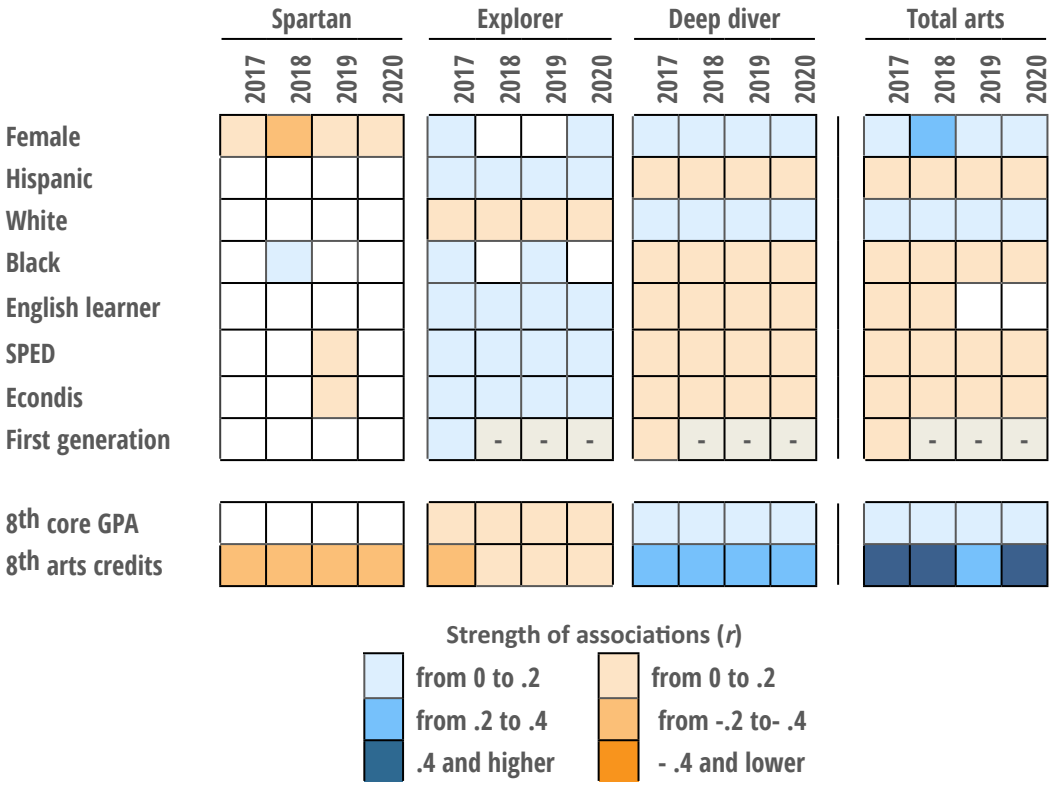
Source. AISD course enrollment records
Note. n = 3219

We wanted to understand the stability of these relationships over time, so we looked at the associations over four groups of students: the graduating classes of 2017, 2018, 2019, and 2020 (Table 1). In Table 1, the color of the box signifies the strength of the association between that student characteristic and the pattern of arts participation. The blue colors signifying progressively stronger positive associations (i.e., the more blue the box, the more likely that student group was to fall in that pattern of arts participation). The orange colors signifying progressively stronger negative associations (i.e., the more orange the box, the less likely that student group was to fall in that pattern of arts participation). Had we found just one year of these trends, the finding would have had troublesome implications for the equitable access of the arts in the district. However, we found the same trends for ~13,500 students from four different graduating classes. The repetition of trends certainly suggests the stability of the inequitable relationships between the patterns of arts participation and these student characteristics.

This way of grouping arts participation by the overall pattern gives us a new perspective on some of the social, cultural, and economic forces that characterize arts participation in general. For the purpose of comparison, on the right hand side of the table, note the total arts credits associations with these student characteristic. The trends for total arts credits look similar to the trends for deep divers. If we only looked at the associations of total arts credits, without the breakdown of these patterns, we could make the faulty conclusion that the fewer arts courses a student took, the more likely they would be to be from a disadvantaged student group. Actually, students who took the absolute fewest arts courses were fairly evenly distributed. The group of students who were most associated with marginalized student characteristics were interested enough in the arts to take arts courses beyond the requirement, but for some reason, never reached the advanced level.

Table 1.

The student charachteristics of the three patterns of arts participtation differed strongly from each other, yet demonstrated fairly consistent trends across the graduating classes of 2017 through 2020.



Source. AISD student records (demographics taken from their senior year) and course enrollment records from 2013–2020
Note. SPED = special education; Econdis = economically disadvantaged. Cells are only shaded when the point-biserial correlation is statistically significant ($p < .05$). 2017 $n = 3175$, 2018 $n = 3513$, 2019 $n = 3424$, 2020 $n = 3488$.

How Did the Patterns of High School Arts Participation Relate to Long-Term Outcomes?

In addition to unique student characteristic profiles, each of the three patterns of arts participation also has a distinct profile of predicted long-term outcomes. In Table 2, the arrows mimic the pattern in the analysis of demographic trends: spartans tended to be mostly neutral, disadvantages (in orange) were predicted for explorers, and advantages (in blue) were predicted for deep divers. It is important to note that these predictions were made while controlling for the predictive power of the 10 student characteristics listed in Table 1. Other student characteristics or school characteristics not accounted for in this analysis of long-term outcomes probably could be identified. However, these results did at least control for the 10 known characteristics (see the methodology sidebar about controlling for student characteristics).

In this study, we looked at the impact of these three patterns of arts participation in relationship to nine long-term outcomes for the class of 2017. The first two outcomes studied were continuous variables: cumulative high school attendance rate and high school GPA. When statistically significant, these results are shown in Table 2 in terms of the difference in predicted outcomes based on the pattern of arts participation. The other seven outcomes were binary variables with only two possible outcomes: the student either met or did not meet the criteria for the outcome. These results are shown in terms of the likelihood of meeting those criteria. Specifically:

- Spartans: When we compared spartans with non-spartans, spartans were 32% more likely to do community service, and 38% more likely to have a job outside of school. They were less interested in the arts than were explorers or deep divers, by definition, and these results suggest they probably had more going on outside of school than did the other two groups.

- Explorers: When we compared explorers with non-explorers, explorers had lower GPAs and were less likely to do community service, to be college ready in math, and to be college ready in both math and ELA. They were also less likely to enroll in college the year after graduation, and for those who did in enroll, they were less likely to persist in college after their first year.

- Deep divers: When we compared deep divers with everyone else, deep divers tended to have higher GPAs; were less likely to have a job outside of school; and were more likely to be college ready in ELA, in math, and in both subjects combined. When we looked at deep divers in comparison with everyone else, deep divers were no more likely to enroll in college or persist in college than were non–deep divers. However, when we took the spartans out of the equation and just compared the two groups who explored arts beyond the requirement, deep divers were 39% more likely to enroll in college and 65% more likely to persist beyond their first year than explorers were.

Table 2.

Long-term outcomes, by pattern of arts participation, controlling for 10 student characteristics in Table 1.

	Spartans vs non-spartan	Explorers versus non-explorers	Deep divers vs non-deep divers	Deep divers vs explorers
HS attendance rate	.	.	.	
HS GPA	.	↓ -0.13 (2833)	↑ 0.14 (2833)	↑ 0.19 (2054)
Community service	↑ 32% (2396)	↓ -22% (2396)	.	.
Job outside of school	↑ 38% (2396)	.	↓ -22% (2395)	.
College ready in ELA	.	.	↑ 29% (2827)	.
College ready in math	.	↓ -32% (2827)	↑ 35% (2827)	↑ 57% (1828)
College ready in both	.	↓ -29% (2827)	↑ 31% (2827)	↑ 50% (1828)
Enrolled in college	.	↓ -26% (2833)	.	↑ 39% (1831)
Persisted in college	.	↓ -27% (2029)	.	↑ 65% (1305)

Source. Student attendance, grade, and course enrollment records from 2012–2017, High School Exit Survey from summer 2017, and National Clearinghouse Data from 2019 for college enrollment in 2018, and 2020 for college persistence in 2019

Note. HS = high school. All values presented are significant at $p < .05$. All analysis controlled for these statuses: female, Hispanic, White, Black, special education, English learner, economic disadvantage, first generation in college, and the number of arts credits taken in 8th grade. In addition, the HS attendance rate was controlled for by 8th-grade attendance rate, and the rest of the outcomes were controlled for by 8th grade academic grade average. Parameter estimates are shown for the linear outcomes, and odds ratios (converted to percentage likelihood) are shown for categorical outcomes.

Methodology Notes:
Why Control for Student Demographics When Looking at Outcomes?

As shown in Table 1, high school arts participation is associated with many student characteristics. While each individual correlation is weak, collectively correlations have a big influence on the relationship between predictors and outcomes in this study.

An Example: College Ready in Math With and Without Controls:
If we were to estimate the predictive relationship of being an explorer to the outcome "college ready in math" with no other controls, we would find that being an explorer decreases the likelihood of being college ready in math by 57%. However, many other factors might be predicting college readiness in math beyond a student's pattern of arts participation . Table 1 shows that for the class of 2017, explorers were less likely to be White and more likely to be female, Hispanic, Black, English learners, on special education plans, economically disadvantaged, and have parents who did not attend college. Is the 57% decrease in the likelihood to be college ready in math explained by being an arts explorer or by the societal disadvantages that students in the explorer group tend to confront? For the purposes of this study, we isolated, as much as possible, the predictive value of arts participation beyond those student characteristics. When we included the student characteristics in our model, we found that being an explorer in the arts still predicted a decrease in the likelihood of college readiness in math, but only by 32% (Table 2). The relationship was still negative, even when we controlled for all these student characteristics, but it was not as strong.

In some of our analyses, the inclusion of controls completely changed the interpretation of the relationship between arts participation and outcomes. Sometimes strong relationships (both positive and negative) completely disappeared when we included the controls. In most cases, however, the nature of the relationship was the same, but weaker once we controlled for student characteristics. Because these differences in student characteristics are so influential on our outcomes of interest, each result in this report controls for the variables in Table 1. Because we wanted to isolate the influence of high school participation in the arts, we also controlled for students' average academic grade from 8th grade (which is related to the outcomes of interest) and the number of arts courses they took in 8th grade (which is related to the number of arts classes they take in high school).

While this type of theoretical analysis is effective for isolating the predictive value of high school arts participation, other student factors or school factors that we did not measure likely also predict arts participation. We can reduce external influences, in order to isolate the influence of arts participation, but we probably cannot eliminate them. Furthermore, the choice to theoretically isolate the influence of arts participation mutes the influence of those categories of privilege and disadvantage that characterize students' actual experiences. Those real-life trends are extremely important, and can be viewed and explored on our interactive dashboard, which shows all secondary arts participation for the last 4 years. It is filterable by art form, student demographic, and school.

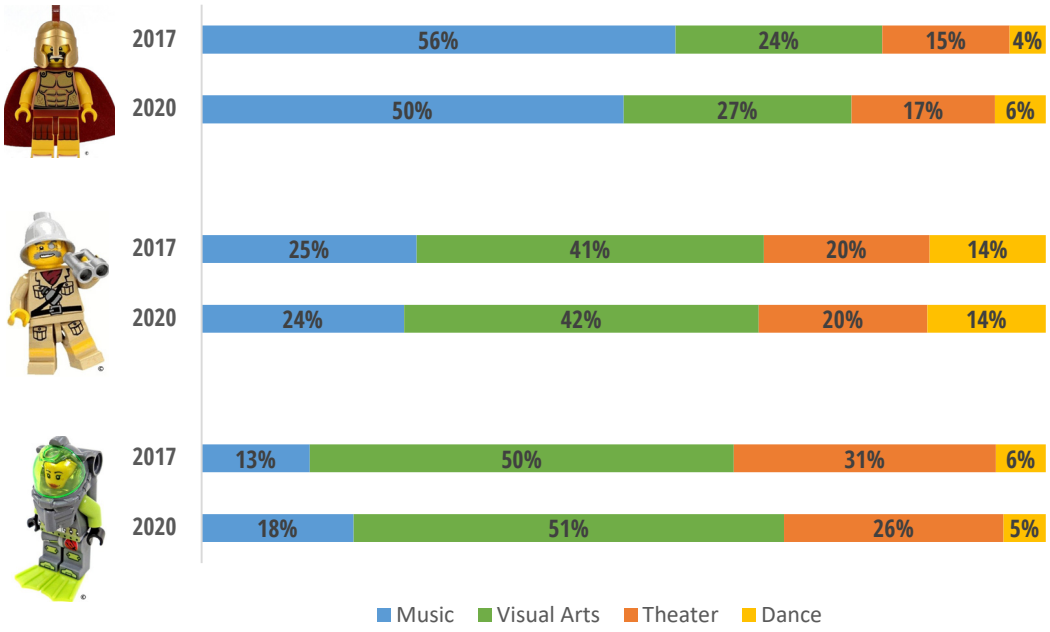
See http://www.austinisd.org/dre Click on INTERACTIVE REPORTS and select "Secondary Visual and Performing Arts Participation" from the Interactive Reports List on the top left.

Were All Art Forms Taken at Similar Rates by Students With Different Patterns of Arts Participation?

When we analyzed how these patterns were distributed between the four art forms offered in our high schools (i.e., music, visual arts, theater, and dance), we found that spartans tended to take many more visual arts courses, and deep divers tended to take many more music courses (Figure 8). In the 2017 study group, half of the credits taken by spartans were in visual arts, whereas only 24% of the credits taken by deep divers were in visual arts. Music had the opposite trend: more than half of the credits (56%) taken by deep divers were in music, and only 13% of the credits taken by spartans were in music. These proportions were very similar for the 2020 study group, showing the stability of these trends over time.

Figure 8.

The proportions of courses taken by students with different patterns of arts participation, distributed by art form, were remarkably similar for the classes of 2017 and 2020.



Source. Student course enrollment records

When researchers and policy makers group all students together without regard to their pattern of arts participation this trend is lost. If we compared high arts participants with low arts participants, broadly speaking, we would also be comparing those who studied music at an advanced level with those who studied visual arts at the minimum level. Instead of grouping all art forms together, we suggest looking at these patterns separately.

Remaining Questions

The Spartans

Regarding the spartans, we do not yet know how they are using elective credits, besides their single credits in the visual or performing arts. We do not know what their intended careers are or whether they participated in career and technical education (CTE) or dual-credit programs. Many of them might be very artistic students who dance pre-professionally in a community studio or do advanced studies in film, photography, graphic design, or creative writing—all which fall outside the scope of visual and performing arts classes. They may love music but not be interested in studying band or orchestra. Whether or not they are artistic outside of school, we only know that they have kept their in-school arts participation to a minimum. We are curious to know how spartans felt about the one arts class they did take in school. Why did so many of them take Art 1 as their one required course, and in general, how did having so many spartans in Art 1 influence that course's method of instruction or experience for other students? Did it discourage continued study? Beyond student demographics, what school factors influenced the proportion of spartans at a school? How could one high school have 8% spartans and another have 52% spartans?

The Explorers

We have a rough interpretation of why spartans are spartans (they have other priorities) and a rough interpretation of why deep divers are deep divers (they love their art forms), but we do not know why explorers are explorers. Why did they start exploring? Did they take the extra credits in art out of genuine interest, because it was perceived as the easiest way to get in the required elective credits, or because it was chosen for them? Assuming some explorers were genuinely interested in the arts in the first place, why did they stop taking arts classes before getting to an advanced level? How many stopped exploring because they had a bad experience in a level 1 course? Did explorers leave arts study, based on the programming (song selection, play selection) or based on an aesthetic misalignment with their teachers? Did explorers perceive the advanced arts classes to be too difficult? Too serious? Alternatively, maybe they found another way outside of school to continue their interest in the arts. Did they hit a scheduling barrier (e.g., a conflict with another course or program that was a higher priority to them, or a conflict with a school-imposed academic support class)? By answering these questions, we might unravel what about being an explorer causes consistent associations with marginalized student characteristics and predicts negative postsecondary outcomes.

The Deep Divers

We know more about the deep divers than we do about the students that fall into the other patterns of arts participation, but we do not really understand how they became deep divers. Did deep divers studying different art forms have different characteristics and outcomes, based on the art form they studied? Why was being a deep diver in visual arts so different from being an explorer in visual arts? What stopped students in visual arts from taking more advanced classes? Why did some schools have higher proportions of deep divers? Why did Akins, LBJ, and Navarro have a lower proportion of deep divers than mobile students (across all schools) have? Our analysis shows that some schools managed to get deep divers from disadvantaged groups at higher than average levels, but we do not know why. Fundamentally, why was being a deep diver so consistently associated with privilege, and is there anything we can do to change that?

Ways to Explore the Patterns of Arts Participation in the Future

In addition to the remaining questions we have about the individual patterns of arts participation, we also have overriding questions about this new way of seeing arts participation. First, we are curious how the trends in 4 years of data from AISD relate to trends in other places. Do other Texas high schools have a similar split of approximately one-third of students in each pattern of arts participation? Are demographic associations with the three patterns of arts participation as consistent across other districts as they are within AISD's last four graduating classes? How universal are these patterns? How do patterns of arts participation vary in other states and other learning systems that have different requirements?

Next, we would like to dig more deeply into students' experiences in AISD. What influences a student's choices in arts learning path? Did we miss any student characteristic that is pivotal in a student's choice of arts learning path (e.g., grit, resilience, parent involvement in the arts)? Alternatively, maybe some school-level characteristics or teacher-level characteristics are pivotal in these learning paths. Do "better" arts teachers tend to attract more explorers than spartans or more deep divers than explorers? Does participation differ when teachers are the same race/gender as their students? Do students persist or desist in arts study, based on the programming or their aesthetic alignment with their teachers?

We would also like to know if the outcomes associated with each pattern of arts participation are seen equally across all demographic groups. Some preliminary analyses showed that being a deep diver might be particularly beneficial for English learners with respect to college readiness in ELA. In our current analysis, due to lack of sample size, we did not look for moderating effects to account for all the controls and interactions. However, if we combined cohorts from several years, we could look into differences for the respective student groups.

Conclusion

While all arts learning is theoretically equally available to all students at AISD high schools, this study found that, in reality, three distinct patterns of arts participation were consistently associated with different student characteristics and different outcomes after graduation. Interestingly, the analysis of the spartans did not raise much concern from an access perspective. We suspect these students were interested in other areas of study and/or work and appreciated the near neutrality of their demographic profile. However, the explorers and deep divers were a stark example of systemic injustice, with explorers bearing most of the disadvantages and deep divers reaping most of the benefits. It is disheartening that the gaps between these two groups were so large, despite only differing in their arts participation by whether or not they reached one advanced course. To what extent these groupings are generalizable to the larger public is still unknown, but it is clear that these patterns are stable across at least AISD's last four graduating classes and that each pattern of arts participation has its own set of shared stories. By bringing awareness to these three patterns of arts participation, and eventually better understanding the forces that create them, we can strategically work towards equitable and empowering arts learning for all students.

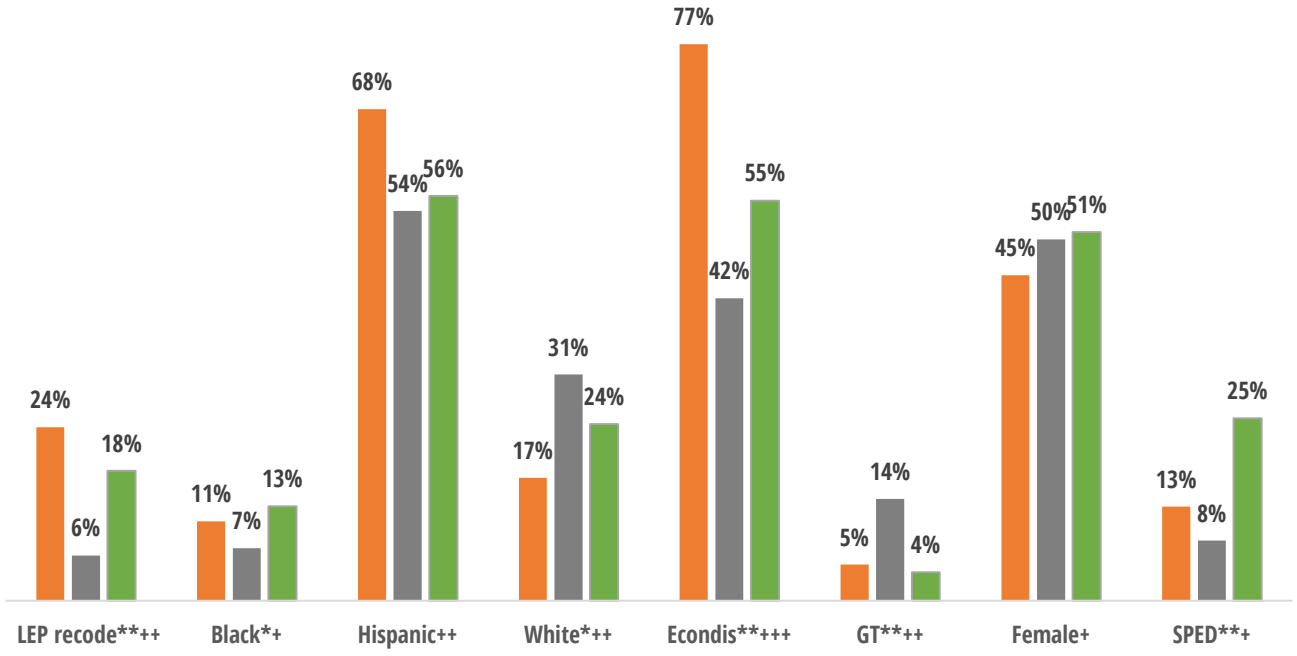
Do you have an insight into these patterns of arts participation, or a related research question you would like to suggest to our research team? Tell us about it here:

https://tinyurl.com/PatternsOfArtsParticipation

Appendix A. Understanding Our Primary Study Group

Figure A1.

Comparison of the 2017 study group, who attended AISD schools for all 4 years of high school; the leavers, who transferred out of the district before graduation; and the joiners, who transferred in after 9th grade.



Source. AISD student demographic records

Note. LEP = limited English proficiency, Econdis = economically disadvantaged, GT = gifted and talented, SPED = special education. Significant differences between joiners and the 2017 study group are indicated with '*' symbols, based on effect size: 0–.2 *weak effect, .2–.5 **moderate effect, .5–.8 ***strong effect, .8 or more ****very strong effect. Significant differences between leavers and our study group are indicated with '+' symbols, based on effect size: 0–.2 = + weak effect, .2–.5 ++ moderate effect, .5–.8 +++ strong effect, .8 or more ++++ very strong effect.

Joiners (in green) attended at least 85% of 2016–2017 as a senior but are not in the study cohort because they did not start high school in AISD. Leavers (in orange) attended at least 85% of 2013–2014 as a freshman but are not in the study cohort because they did not finish high school in AISD. These groups could not be included in the study group due to missing data. The fact that our 2017 study group is significantly different from those with missing data is an important limitation on the study. In some cases, analyses were even more limited to students who also attended AISD in 8th grade. Students were omitted from the study for two other reasons regarding data integrity. Those whose cumulative high school attendance was more than three deviations from the mean were removed, as well as 49 students who earned their arts credits in nontraditional ways. These 49 students did not have records the required arts credits, but when individual records were pulled, there was an understandable exception in every case: it was a recording error, they took the credit over the summer through another educational organization, they took their high school art credit before 9th grade, or they genuinely had not taken/passed arts class but also did not graduate from high school on time.

Appendix B. Examining Mobility as Predictive Factor

Table B.

Comparison of long-term outcomes between all students in the study cohort (all) and those who stayed at one high school for all 4 years (non-mobile), by pattern of arts participation.

	Spartans vs non-spartans		Explorers vs non-explorers		Deep divers vs non-deep divers		Deep divers vs explorers	
	All	Non-mobile	All	Non-mobile	All	Non-mobile	All	Non-mobile
HS attendance rate	.	.	.	.	.	.		
HS GPA	.	.	↓ -0.13 (2833)	↓ -0.13 (2561)	↑ 0.14 (2833)	↑ 0.12 (2561)	↑ 0.12 (2054)	↑ 0.19 (1643)
Community service	↑ 32% (2396)	↑ 40% (2172)	↓ -22% (2396)	↓ -45% (2174)	.	.	↑ 101% (1399)	
Job outside of school	↑ 38% (2396)	↑ 40% (2172)	.	.	↓ -22% (2395)	↓ -22% (2172)		
College ready in ELA	.	.	.	.	↑ 29% (2827)	↑ 31% (2561)		↑ 36% (1643)
College ready in math	.	.	↓ -32% (2827)	↓ -31% (2561)	↑ 35% (2827)	↑ 32% (2561)	↑ 57% (1828)	↑ 55% (1643)
College ready in both	.	.	↓ -29% (2827)	↓ -29% (2561)	↑ 31% (2827)	↑ 30% (2561)	↑ 50% (1828)	↑ 52% (1828)
Enrolled in college	.	.	↓ -26% (2833)	↓ -21% (2561)	.	.	↑ 39% (1831)	
Persisted in college	.	.	↓ -27% (2029)		.	.	↑ 65% (1305)	↑ 54% (1199)

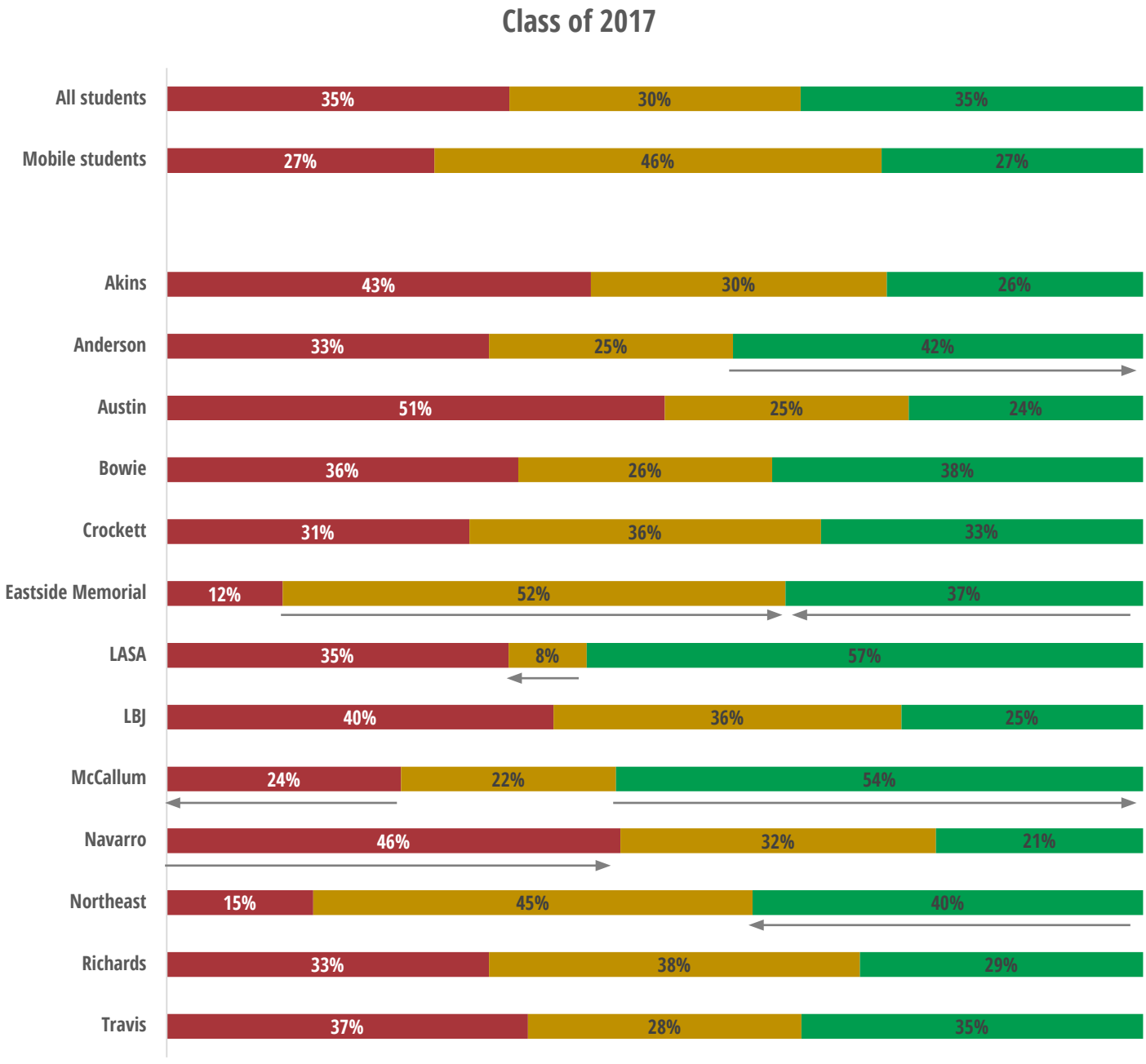
Source. Student attendance, grade, and course enrollment records from 2012-2017, High School Exit Survey from Summer 2017, and National Clearinghouse Data from 2019 for college enrollment in 2018, and 2020 for college persistence in 2019.

Note. HS = high school. All values presented are significant at $p < .05$. All analysis control for these statuses: female, Hispanic, White, Black, special education, English learner, economic disadvantage, first generation in college, and the number of arts credits taken in 8th grade. In addition, HS attendance rate is controlled for by 8th grade attendance rate, and the rest of the outcomes are controlled by 8th grade academic grade average. Parameter estimates are shown for the linear outcomes, and odds ratios (converted to percentage likelihood) are shown for categorical outcomes.

Appendix C. The Distribution of Patterns of Arts Participation Varied Widely by High School Attended, but Consistently Across Years.

Figure C1.

Distribution of non-mobile spartans, explorers, and deep divers for the class of 2017, based on high school attended. (An arrow underneath a group indicates the group's actual proportion was significantly different (p <. 05) from the predicted value, based on the student demographics at the school.)

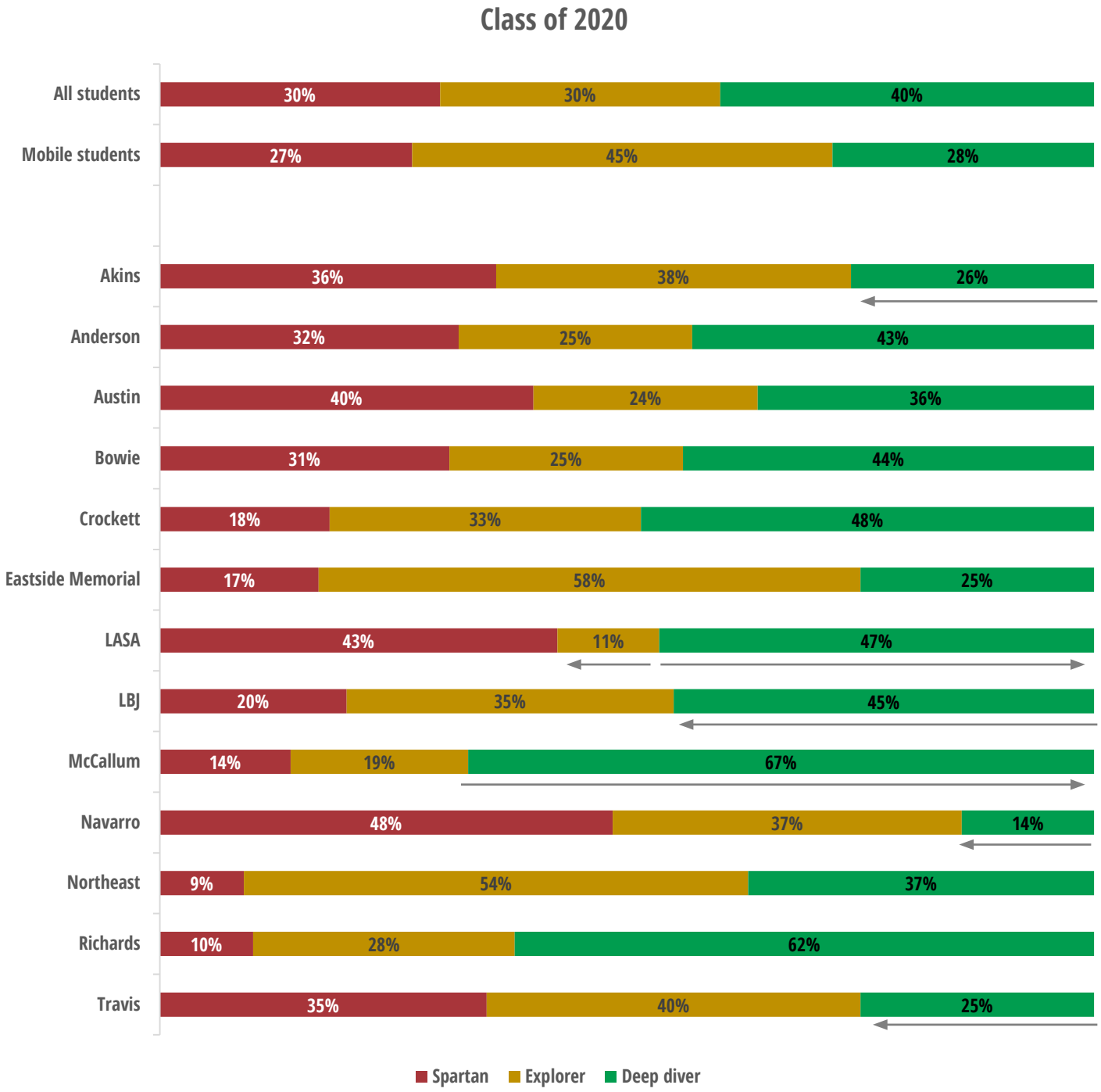


Source. AISD course enrollment records

Note. Predictions are based on students' gender, race, ethnicity, special education status, English learner status, economic disadvantage status, academic grade average in 8th grade, and arts credits taken in 8th grade. (n = 3175).

Figure C2.

Distribution of non-mobile spartans, explorers, and deep divers for the class of 2020, based on high school attended. (An arrow underneath a group indicates the group's actual proportion was significantly different (p <. 05) from the predicted value, based on the student demographics at the school.)



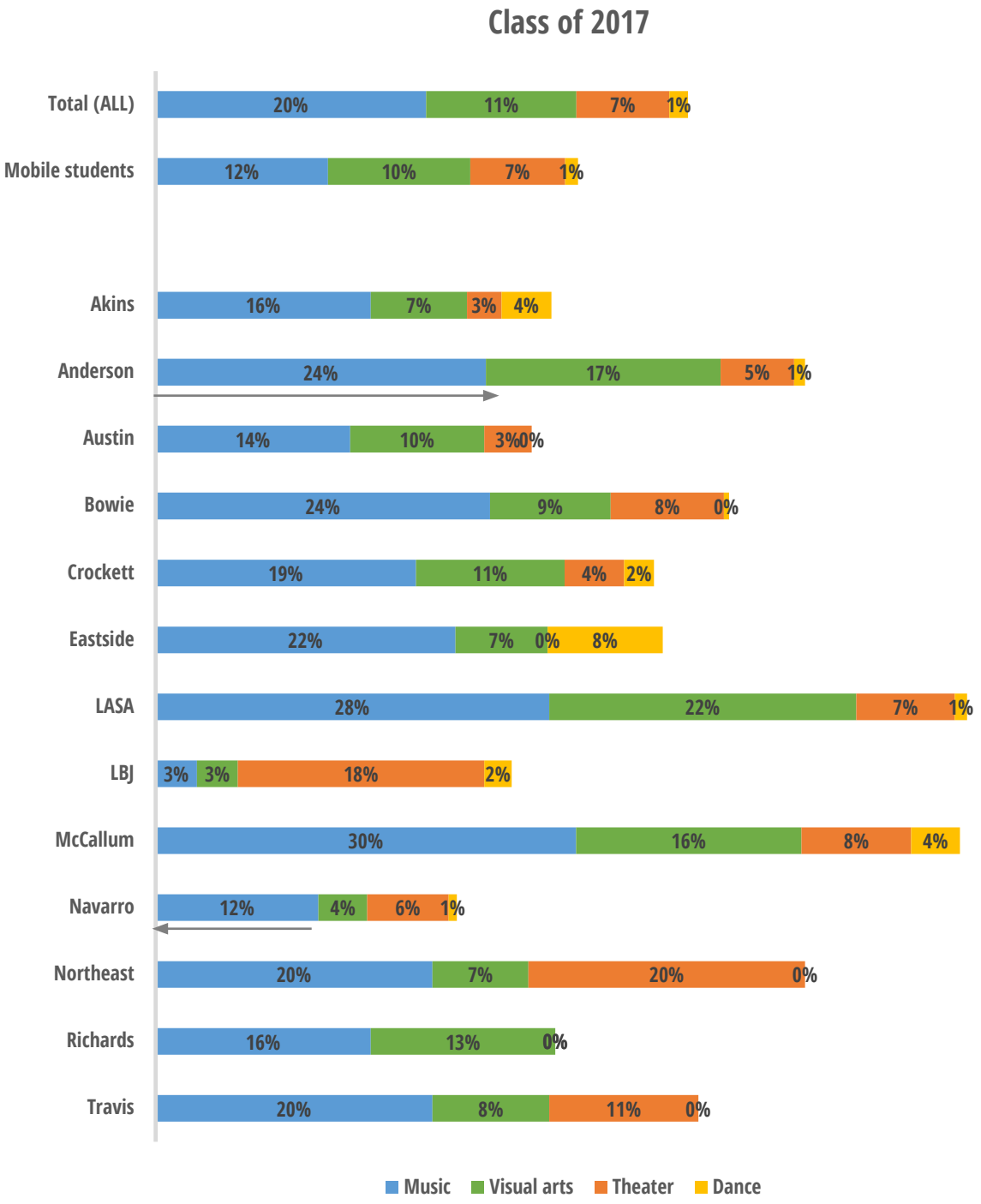
Source. AISD course enrollment records

Note. Predictions are based on students' gender, race, ethnicity, special education status, English learner status, economic disadvantage status, academic grade average in 8th grade, and arts credits taken in 8th grade.

Appendix D. Art Forms Studied by Deep Divers by School, in 2017 and 2020.

Figure D1.

Distribution of non-mobile deep divers for the class of 2017 at each high school, by art form (An arrow underneath a group indicates the actual proportion was significantly different (p <. 05) from the predicted value, based on the student demographics at the school.)

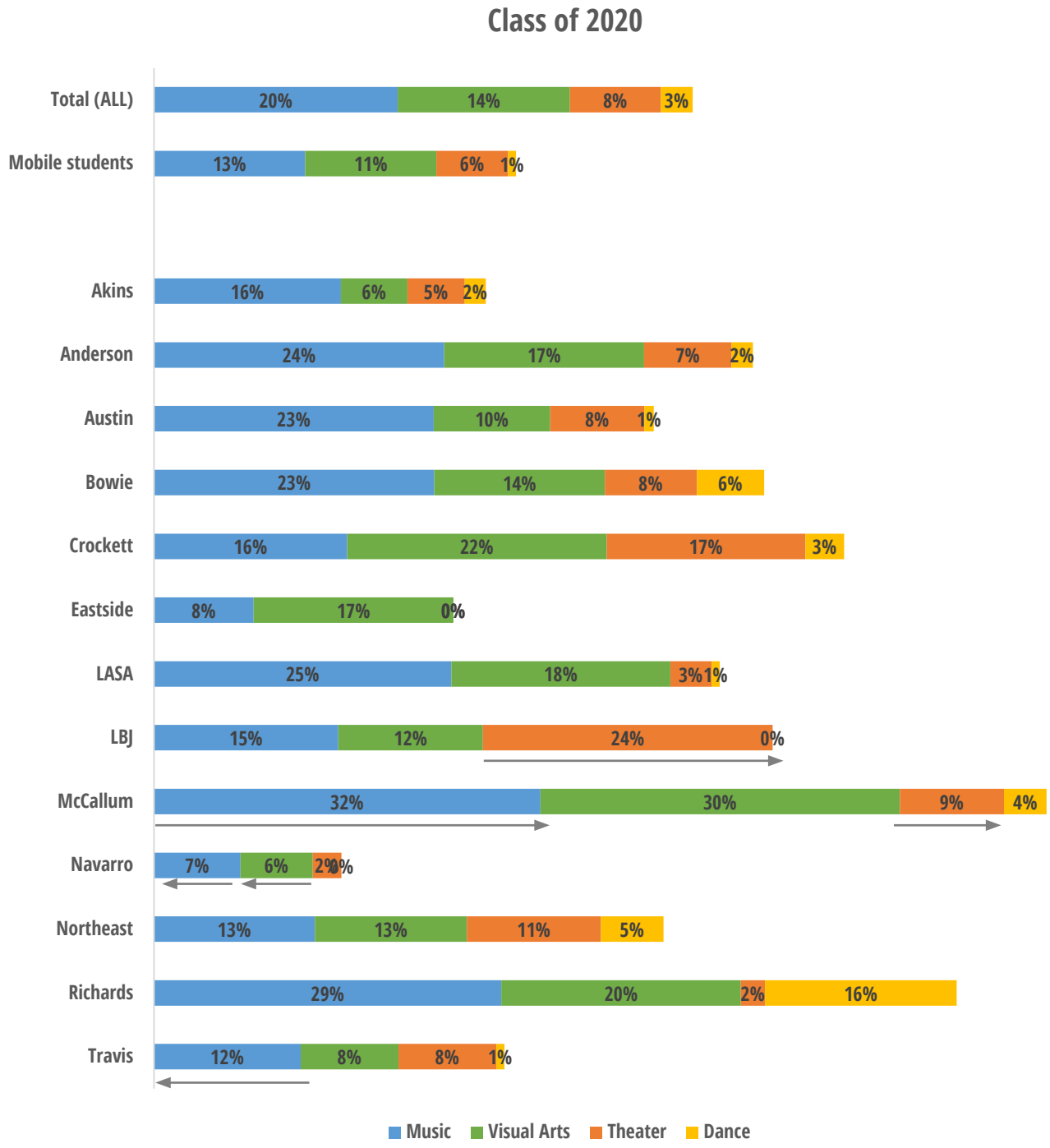


Source. AISD course enrollment records

Note. Predictions are based on students' gender, race, ethnicity, special education status, English learner status, economic disadvantage status, academic grade average in 8th grade, and arts credits taken in 8th grade. Students are double counted in this figure if they were deep divers in multiple art forms.

Figure D2.

Distribution of non-mobile deep divers for the class of 2020 at each high school, by art form (An arrow underneath a group indicates the actual proportion was significantly different (p <. 05) from the predicted value, based on the student demographics at the school.)



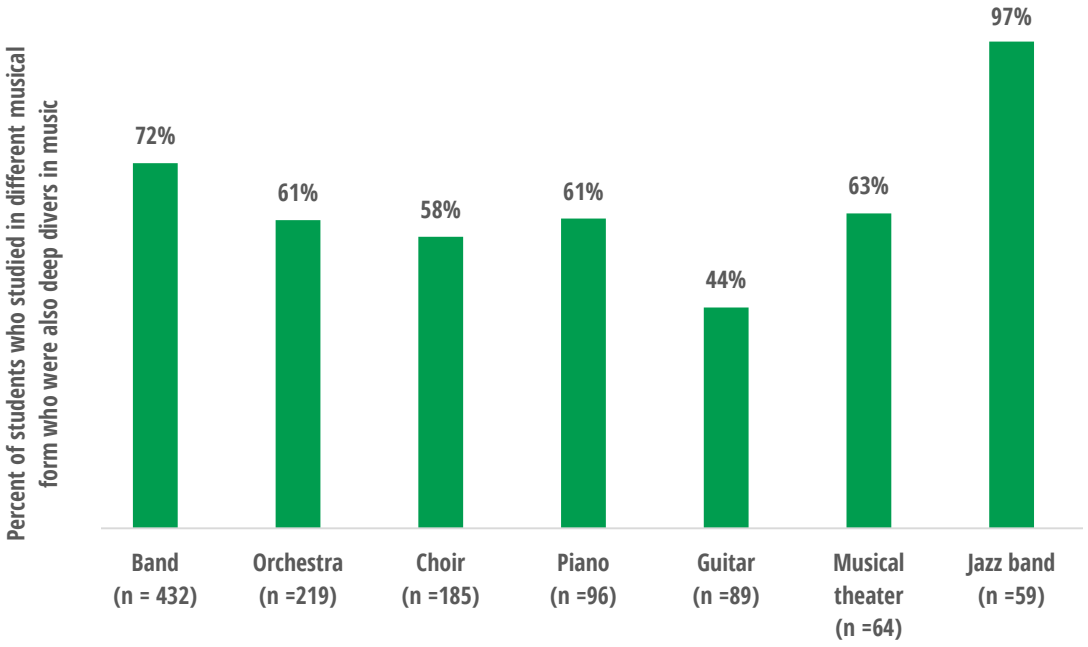
Source. AISD course enrollment records

Note. Predictions are based on students' gender, race, ethnicity, special education status, English learner status, economic disadvantage status, academic grade average in 8th grade, and arts credits taken in 8th grade. Students are double counted in this figure if they were deep divers in multiple art forms.

Appendix E. Long Term Patterns of the Music Study by Subdiscipline

Figure E1.

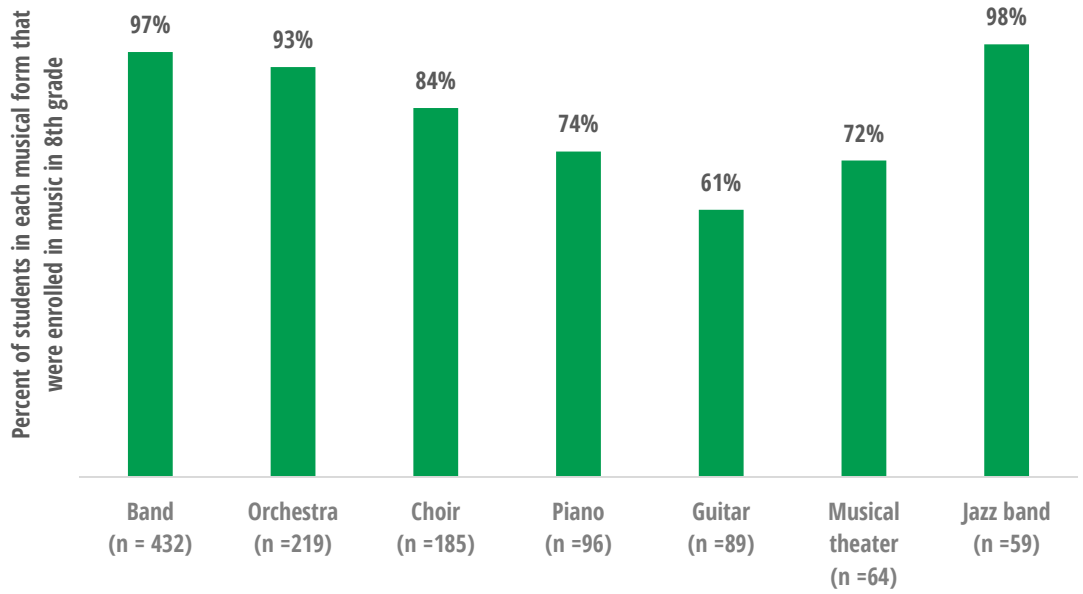
Each subdiscipline of high school music had a different percentage of its participants who ended up being deep divers, with guitar having the least (44%) and jazz band having the most (97%).



Source. AISD course enrollment records

Figure E2.

Each subdiscipline of high school music had a different percentage of its participants who were already enrolled in music classes by 8th grade, with guitar having the least (61%) and jazz band having the most (98%).



Source. AISD course enrollment records

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