Assessment of Equitable Outcomes and Strategy for The Museum School's Application Process

Prepared by the Georgia Conservancy

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1 Project Overview

Introduction

In 2019, the Diversity Committee of The Museum School's Governing Board requested assistance from the Georgia Conservancy to evaluate its ability to promote diversity and equity within their student body through the admissions process. Specifically, the Committee was interested in gleaning lessons and trends from recent admissions processes to do the following:

1. Assess the impact of targeted efforts to recruit diverse, economically disadvantaged students
2. Determine any necessary further changes to the admissions process, scope, and targets.

Throughout 2020, Georgia Conservancy analyzed a wealth of data. These findings coalesced in this report, which offers considerations for how TMS can simultaneously champion a diverse and equitable student body while promoting its core values of creating a consistent, community-centered learning environment for children.

About Georgia Conservancy

Georgia Conservancy (GC) is a statewide conservation non-profit that has been operating in Georgia for over 50 years. The organization's mission is to protect & conserve Georgia's natural resources through advocacy, engagement & collaboration.

GC believes this can be achieved by paying appropriate attention to the conservation, stewardship, and use of our resources, all of which are governed by policies and regulations erected by humans. The Sustainable Growth program, the organization's community planning arm, emerged from this philosophy. Decisions we make about our land have great impact on the health of our natural environment and the communities we call home.

Schools are significant drivers of community growth and change. As part of its menu of services, the Sustainable Growth program consults with local leaders and policymakers to discuss how schools—specifically school location and design—can facilitate or hinder the development of prosperous communities. Georgia Conservancy is thrilled to continue our work at the intersection of schools and community building through this project.

About The Museum School

The Museum School of Avondale Estates is a public charter school in DeKalb County, Georgia, which has been operating for over 10 years. The mission of The Museum School of Avondale Estates is to inspire students, teachers, and the community to collaborate to develop strong critical thinking, interpersonal, and academic skills in their students, which will prepare them for real-world success.

TMS offers a curriculum that follows The Museum Model, which promotes student autonomy and facilitates education through hands-on experience and exploratory learning. This model encourages deep learning through unique partnerships with external institutions and "exhibits" of student work multiple times a year. The curriculum is aligned with Georgia Performance Standards. TMS is also a member of the Georgia Charter Schools Association.

TMS serves students from kindergarten to 8th grade. Applications are selected through a weighted lottery. Enrollment is open to all students within DeKalb County based on available space, although preference is given to students that fall into the "primary" attendance zones for Avondale Elementary and Peachcrest Elementary. Other preferences are also given to certain students based on socioeconomic status, sibling enrollment, and relation to staff or board members. These will be explored more fully in Section 2.

As a public school chartered in DeKalb County, TMS must meet various requirements in accordance with their charter. These will also be explored in Section 2.

Project Tasks

Tasks for this project were grouped into three main categories.

Background Research:

Introductory interviews and independent research informed what questions related to TMS's equity goals needed to be answered and what analyses could be performed to answer them. Tasks included:

- Conducting informational interviews with TMS Executive Director and members of the Diversity Committee
- Participating in regular project check-ins with members of the Diversity Committee
- Conducting independent research conducted from online sources

Geospatial Data Analysis:

A thorough examination of data related to the admissions process formed the bulk of this project. Data on student applicants were provided by TMS staff and board members and cross-examined against other publicly available data sets to look for trends and opportunities. Various analyses were performed to understand each applicant pool from multiple perspectives. These will be outlined in Sections 4 and 5. Tasks included:

- Performing descriptive statistics on three sets of application data from TMS's lottery system.
- Standardizing and aligning TMS data sets for easy interpretation in spatial analysis software.
- Compiling data from additional sources, including DeKalb County and the United States Department of Housing and Urban Development (HUD).

- Performing grouping analyses and hotspot analyses to determine degree of randomness in overall spatial distributions against variables related to equity.
- Performing grouping analyses based on specific characteristics of applicants (i.e. grade level, economically disadvantaged status).

Application and Presentation of Findings:

Statistical measurements then shed light on how TMS might need to adjust processes to meet equity goals. These findings lay out possible avenues for TMS leadership to take based on certain operational realities and constraints. GC compiled these opportunities and challenges in presentations for the Diversity Committee and the Governing Board at large, as well as in this report. Tasks included:

- Analyzing statistical outputs for broader trends and compiling them into meaningful conclusions
- Identifying potential operational constraints that could influence how TMS chooses to respond to statistical trends and implications
- Compiling a technical memo detailing the project background, problem statement, analysis and findings, and recommendations
- Compiling all project information into presentations for the TMS board and staff

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2 Problem Statement and Foundational Questions

This report arose from a need to critically assess The Museum School's ability to meet diversity and equity goals advanced by different parties. The Museum School views equity in education as an essential objective and works to advance this view through various structures, including the Diversity Committee of the Board of Directors and a staff-based Equity, Diversity, and Inclusion (EDI) team. In addition, The Museum School has built certain diversity objectives into its charter with DeKalb County. This analysis intended to provide some insight into the effectiveness of existing goals and help craft explore future actions that advance equity, diversity, and inclusion initiatives.

The Museum School's Values

To accomplish its mission of preparing its students for real-world success through innovative ways, The Museum School holds a series of core values that shape the way it operates. Cooperation, respect, and creativity are just a few that reinforce a learning model that prioritizes individual needs in service of collaborative success in the classroom.

The Museum School uses the Museum curriculum as its pedagogical foundation. This curriculum incorporates "constructivism," a learning philosophy rooted in the idea that we construct our understanding of the world through our personal experiences and reflecting on them. Because everyone interprets experiences differently, teaching styles and techniques must reflect that by tailoring lessons and activities to fit different children's needs.

To facilitate this learning style, form follows function at TMS. The school keeps student-teacher ratios on the smaller side in order to provide one-on-one instruction well-suited to individual students' needs.[*] Total enrollment at the school follows this scale as well, with around 60 students per grade level. Children who enroll at TMS usually remain until 8th grade, although current students do transfer away from TMS on occasion.

Another component of TMS's unique learning model is its interaction with the community at large, which its mission emphasizes. Collaboration between students, teachers, parents, and community members is crucial to build a well-rounded educational experience. Thus, TMS's lottery system favors applicants within its primary attendance zone of Avondale Elementary School and neighboring Peachcrest Elementary School. Selecting students within a specified geography contributes to the sense of community TMS wants to build.

[*] Kindergarten and 1st grade ratios are 1 teacher to every 10 students. 2nd and 3rd grade are 1:13, 4th and 5th grade are 1:15, and 6th through 8th are 1:18.

The Museum School's Charter

As mentioned previously, The Museum School is a public school chartered in DeKalb County, Georgia. The charter outlines the various requirements and stipulations to which TMS must adhere in order to remain a DeKalb County charter school.

As part of its charter, DeKalb County requires TMS to increase its total percentage of economically disadvantaged students by at least 4% every year of the charter term, until the school is within 10% of the DeKalb County School District average. The 4% requirement can be waived if existing lottery preferences make this number mathematically impossible. The current charter term extends to June 30, 2022.

The Museum School's EDI Initiatives

Over the last few years, TMS leadership has taken many steps to advance its own equity, diversity, and inclusion goals.

The Governing Board of The Museum School launched the board-level Diversity Committee, which is charged with supporting the administration's effort to advance equity, diversity, and inclusion within the school community. The Diversity Committee also provides an overall vision and direction for The Museum School's EDI efforts. A staff EDI team also was formed to work on several key initiatives.

As part of these efforts, staff members have attended trainings on EDI to advance their understanding of systems of marginalization and justice, as well as specific restorative practices. TMS also hired an EDI consultant who has begun working with school leaders and school staff to ensure processes are in line with TMS's EDI goals. Actions performed have included classroom audits, reviews of application forms and other recruitment materials, and relationship-building with HBCUs and advocacy organizations. The consultant has also been working with the Diversity Committee on updating TMS's mission and values to more fully incorporate the school's work to advance equity, diversity, and inclusion.

This analysis project with the Georgia Conservancy is a direct result of the Diversity Committee's goal to assess existing EDI metrics and forming recommendations for future progress.

Foundational Questions

This data analysis project and report seeks to provide information through data analysis on TMS's past applicant pools. Using recent data, the report then imagines future scenarios for how to meet diversity targets and what actions might be required to do so.

The questions at the foundation of this report involve the following:

- How are geography, spatial patterns, and social grouping influencing who applies to The Museum School?
- How are geography, spatial patterns, and policies affecting who is admitted to The Museum School?
- How can TMS change its policies to admit more economically disadvantaged students while keeping its geographical focus, community focus, and student-centered learning model?

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3 Application System Overview

The Museum School has the fortune of being considered a desirable place for children to attend school in DeKalb County. Year over year, the school regularly receives far more applications for students than it can admit. This section will detail how TMS's lottery system functions, giving basic facts on selection preferences and some basic enrollment data trends.

Lottery Priorities and Preferences

Pursuant to its charter, TMS must ensure that students have an equal opportunity for admission through a randomized lottery. This requirement only applies when applications outnumber spots at the school, which occurs annually.

Mechanisms have been added to the lottery system, however, to favor certain traits over others. These were selected in accordance with TMS and DeKalb County goals, based on precedent from federal education policy. These traits can be divided into preferences and priorities.

Students with a **preference** trait are considered first before students without a preference trait. These are usually static, though the "economically disadvantaged" preference is governed by a weight set by the board each year. Students with a **priority** trait are then considered and placed.

Preference Traits:

- Siblings. Applications are weighted more heavily if the applicant has a sibling who is already enrolled in TMS. "Sibling" in this case refers to siblings, half-siblings, step-siblings living in the same household, or foster children living in the same household. Siblings of the same grade level are considered as one application to avoid splitting children up. Step-siblings living in different households do not qualify, nor do applicants with a sibling currently enrolled in 8th grade who will graduate before the new student arrives. The weight for sibling preference is static.
- Children of staff and board members. Applications are weighted more heavily if the applicant is the child of a staff member or board member of TMS. The parent or guardian must be employed full-time. The weight for staff/board preference is static.
- Economically disadvantaged. Applications are weighted more heavily if the applicant is from a family whose annual income puts them below the poverty line, *or* qualifies for free or reduced lunch, *or* qualifies for federal benefits including SNAP, TANF, WIC, or Medicare. This category is self-declared. The weight for this category is dynamic, set by the board every year in accordance with the DeKalb County charter.

Priority Traits:

- Area 1/Focus Area 1. This is the only priority trait used by TMS as part of their admissions process. First priority is given to students within the combined geographical boundary of the attendance zone for Avondale Elementary School and Peachcrest Elementary School.[†]

After the first round of selection, students from either geographical area (Area 1 or Area 2) are placed on a joint waiting list in order of preference. As seats become available, waiting list candidates are contacted and offered admission.

Broad Admission Trends

TMS board and staff members are quite familiar with trends related to admission, especially those that result from structural constraints.

First, more kindergartners are accepted than any other grade level. This makes intuitive sense, as all kindergartners would be completely new to TMS, whereas other grade levels have a high re-enrollment rate from previous grade levels. This suggests that many diversity-related measures and policies ought to focus on expanding diverse applicants among this grade.

Second, lately the "share" of kindergartners among the admitted student pool has decreased. From '18-'19 to '20-'21, the share of non-kindergartners admitted has increased. TMS leadership has made clear that the current facility's maximum enrollment capacity has been reached; therefore, it is unlikely that this is a result of expanded classroom sizes. Mid-year transfers or withdrawals could explain this trend.

Lastly, TMS receives far more applications from *outside* Area 1 than inside it. To be sure, there are enough Area 1 applicants to fill most prospective slots every year; however, demand for TMS's unique curriculum and community-centered model can be felt across DeKalb County, particularly from the eastern and southeastern portions.

[†] Typically, students will be selected from Area 1 first before any applicants from Area 2. In practice, this has proven mostly accurate in recent years, with some students with a preference being admitted from Area 2 before Area 1 candidates. This will be explored in later analysis sections.

4 Descriptive Analysis of Incoming Students

Before examining the geography and spatial grouping of applicants to The Museum School, we first tabulated basic statistics from each year's lottery draw. This descriptive analysis provided a basic understanding of the dynamics of each applicant pool and began to establish trends regarding the number of applicants and proportions of applicants with different preferences.

Methods

Simple calculations were made based on the share of students with specific qualities against the larger applicant pool. Statistics analyzed included:

- Selected students per grade level
- Selected students per Area 1 vs. Area 2
- Selected students with various preferences (sibling, children of staff/board, economically disadvantaged)
- Trends between years of:
    - % economically disadvantaged selected
    - % economically disadvantaged waitlisted
    - % of economically disadvantaged kindergartners

Application Overview

To give context to the landscape of data analyzed below, Table 1 shows the total number of applicants against the number of applicants selected for each year. Table 2 shows the applicants grouped by preference status. (Please note that some applicants held more than one preference.)

Table 1. Selected applicants against total number of applicants by year.

	2018-19	2019-20	2020-21
Total applicants	847	1114	1113
Total selected	73 (9%)	90 (8%)	119 (11%)

Table 2. Applicants categorized by preference status.

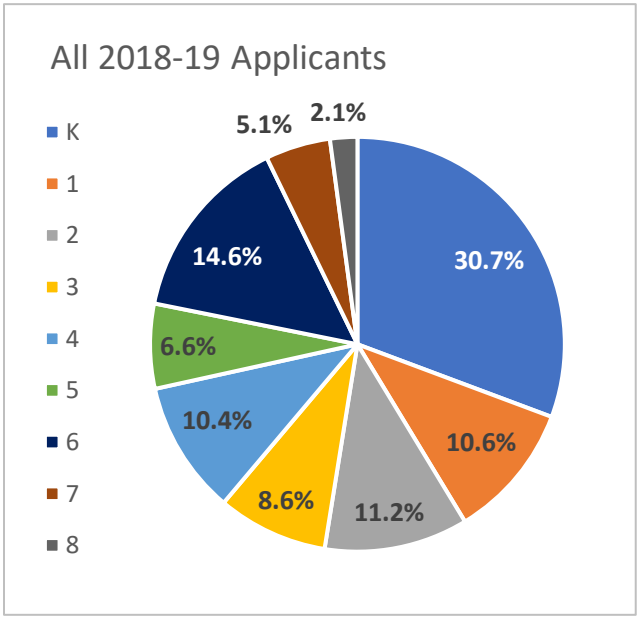
	2018-19	2019-20	2020-21
Total applicants	847	1114	1113
Economically disadvantaged	304	352	358
Children of staff/board	11	10	16
Siblings of enrolled students	52	47	45
Area 1	276	276	303

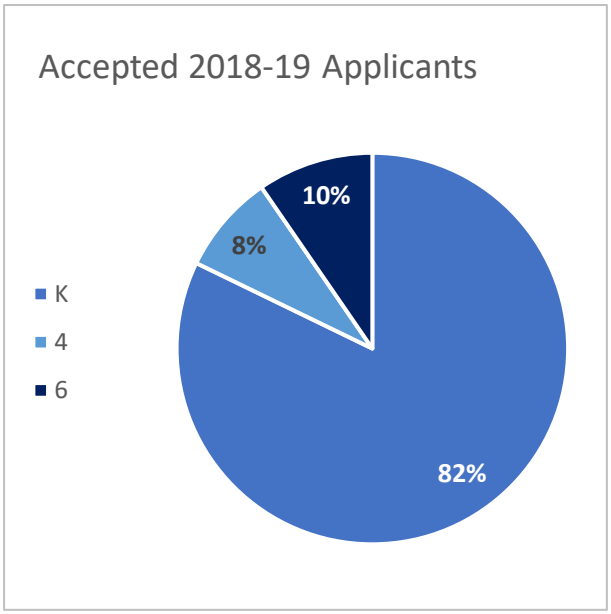
Descriptive Statistics for '18-'19

We began our analysis with data from the application lottery for the 2018-19 school year. Because it was the first year of applicant data, 2018-19 set the "baseline" for further descriptive analysis.

Overview:

- All applications
  - 847 applications
  - 774 waitlisted
  - 73 selected
- Kindergartners
  - 260 applied (31% of all applications)
  - 200 waitlisted
  - 60 selected (82% of all selected applicants)
- Economically disadvantaged students
  - 304 applied
  - 274 waitlisted
  - 30 selected (41% of all selected applicants)
- Other preferential status[‡]
  - 35 siblings of enrolled students selected (70% of all sibling candidates)
  - 5 children of board members selected
  - 6 children of faculty/staff selected





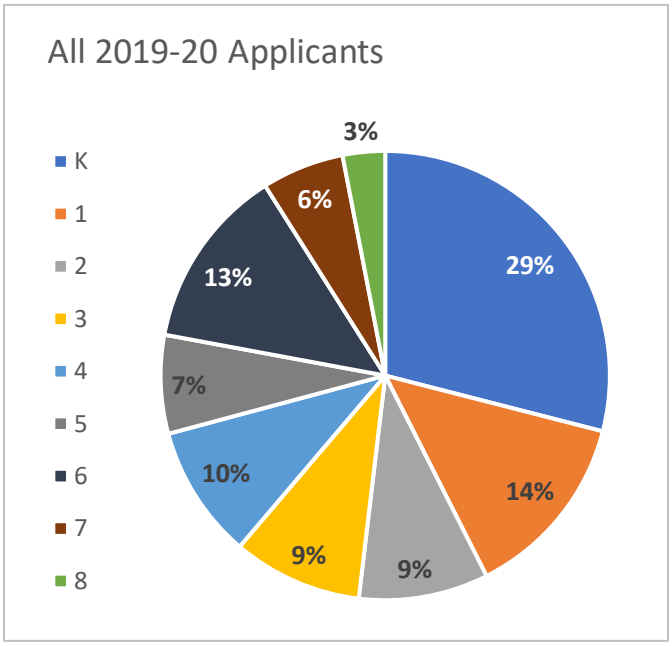
[‡] Note: These subcategories include all students with that preferential status, including those that hold more than one (i.e. sibling *and* economically disadvantaged, or sibling *and* children of faculty/staff). Students with no preference other than Area 1 residency are not included.

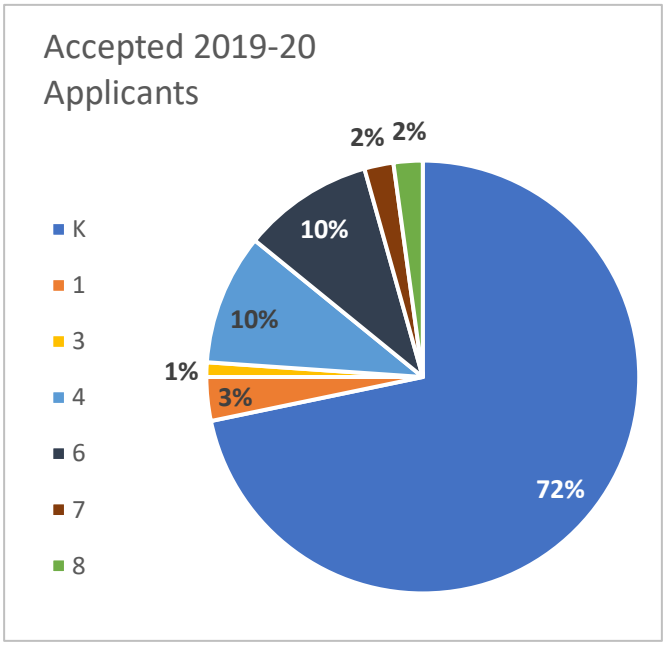
Descriptive Statistics for 2019-20

The 2019-2020 school year saw a large increase in applicants, with the share of kindergarten applications declining relative to other grade levels. While the number of economically disadvantaged applicants increased, the percentage of those selected dropped slightly.

Overview:

- All applications
  - 1114 applications
  - 1015 waitlisted
  - 90 selected
- Kindergartners
  - 328 applied (29% of all applications)
  - 262 waitlisted
  - 66 selected (72% of all selected applicants)
- Economically disadvantaged students
  - 352 applied
  - 326 waitlisted
  - 26 selected (29% of all selected applicants)
- Other preferential selections
  - 34 siblings of enrolled students selected (72% of all sibling candidates)
  - 9 children of board members selected
  - 1 child of faculty/staff selected



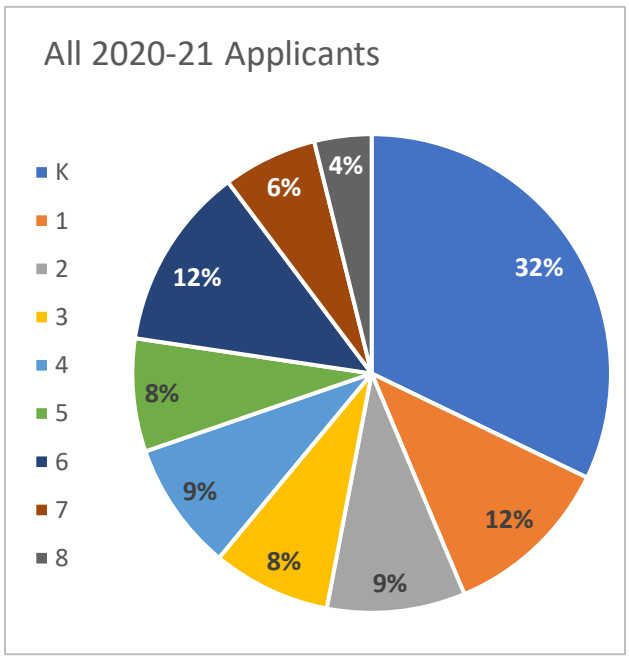


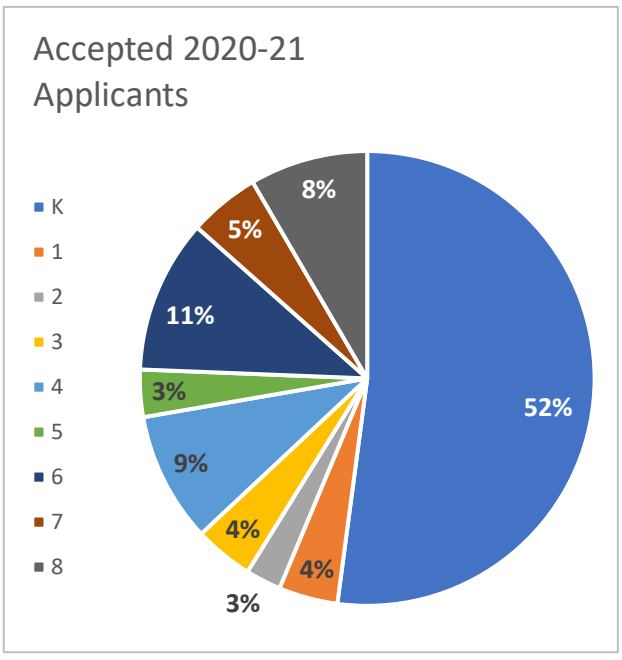
Descriptive Statistics for 2020-21

Applications increased for the 2020-21 school year as well, with even fewer kindergartners selected proportionally to other grade levels. In contrast to the year prior, the 2020-21 application cycle saw a decrease in economically disadvantaged applicants, but an increase in the number selected.

Overview:

- All applications
  - 1113 applications
  - 973 waitlisted
  - 119 selected
- Kindergartners
  - 358 applied (32% of all applications)
  - 289 waitlisted
  - 62 selected (52% of all selected applicants)
- Economically disadvantaged students
  - 331 applied
  - 295 waitlisted
  - 36 selected (30% of all selected applicants)
- Other preferential selections
  - 40 siblings of enrolled students selected (89% of all sibling candidates)
  - 3 children of board members selected
  - 13 children of faculty/staff selected





Descriptive Trends

Several trends emerged from this first glimpse into each year's applicants. First, while kindergarten has been the historical point of entry for TMS, the share of kindergartners selected relative to admitted students from other grade levels has dropped steadily for the past 3 years (Table 3). While this trend is unlikely to be something upon which TMS leadership can rely for future recruitment, given that enrollment per grade level is at the upper threshold for what the current facility can accommodate, it does suggest there is a demand for students who enter at higher grade levels.

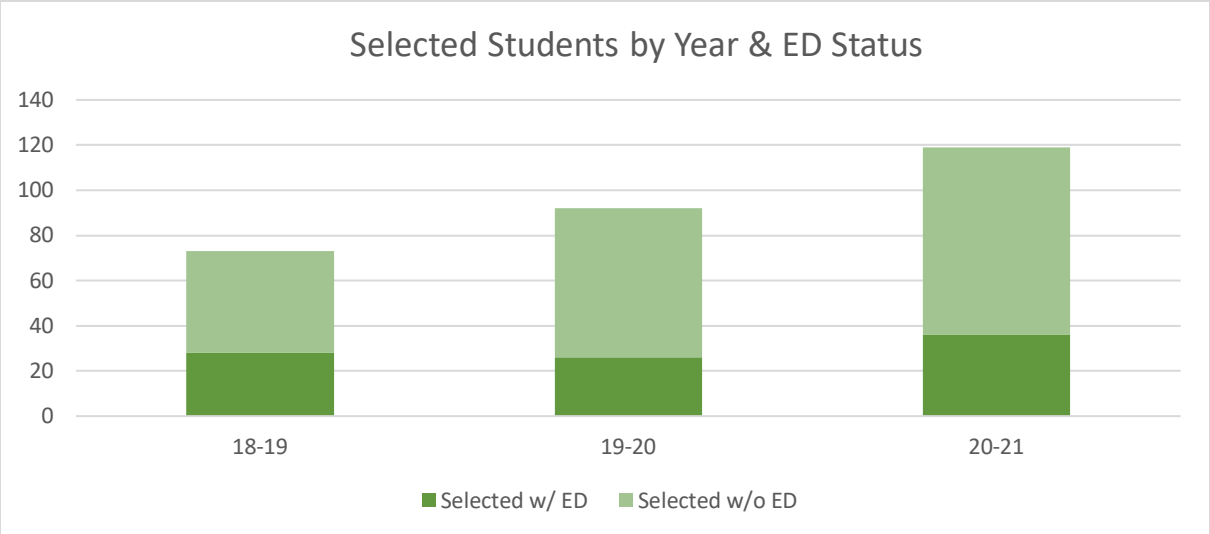
Second, numbers and proportions of newly-admitted economically disadvantaged have fluctuated widely (Table 4). 2019-20 in particular saw a dip in these students, particularly among kindergartners. This finding will be explored more in later chapters, but this could be explained in part by fluctuating weights from year to year. Augmented recruitment efforts between 2019-20 and 2020-21 could have also affected these numbers.

Table 3. Shares of kindergartners compared to overall applicants and selected applicants.

	2018-19	2019-20	2020-21
K applicants	260 (31%)	323 (29%)	358 (32%)
K selected	60 (82%)	66 (72%)	62 (52%)

Table 4. Shares of economically disadvantaged applicants relative to overall and selected applicants.

	2018-19	2019-20	2020-21
ED applicants	304 (36%)	352 (32%)	331 (30%)
Share of ED that were selected	30/304 (10%)	26/352 (7%)	36/331 (11%)
Share of selected that are ED	30/73 (41%)	26/90 (28%)	36/119 (30%)



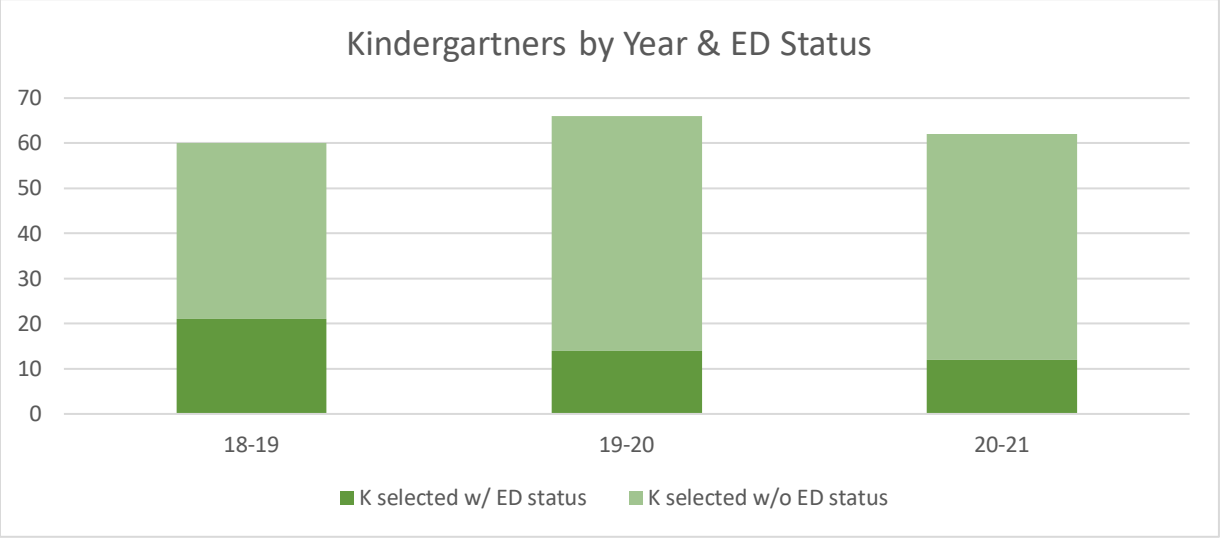
The intersection between the kindergarten applicant pools and the economically disadvantaged pools also offered interesting trends. If kindergartners form the bulk of new selected students, it follows that a strong opportunity exists to increase the share of economically disadvantaged TMS students through admittance to kindergarten. When combined, the share of economically disadvantaged kindergartners has followed a similar trend to selected economically disadvantaged students overall, as seen in the Table 5 and its accompanying graph.

One other trend worth mentioning is the fluctuation in other preferences, especially preference given to children of board members and children of faculty and staff members. From 2018-19 to 2020-21, the share of newly admitted students that fit this category has risen from 11 to 16.

This number, of course, will vary from year to year, as children age and new board members and faculty and staff join TMS. Because of this variation, it is unlikely to be something upon which TMS can rely to meet its diversity targets. At the same time, the share of students with this preference is still significant and should be taken into consideration with the other trends as an influential factor in application selection. It is worth noting that no applicants who are children of board, faculty, or staff throughout these 3 years of data held "economically disadvantaged" status.

Table 5. Share of kindergartners from ED families.

	2018-19	2019-20	2020-21
New kindergartners	60	66	62
New kindergartners from ED families	21 (35%)	14 (21%)	12 (19%)
New kindergartners with other preference	31 (52%)	32 (48%)	25 (40%)
New kindergartners with no preference (besides Area 1 residency)	8 (13%)	20 (30%)	25 (40%)



5 Geospatial Analysis of Incoming Students

The second part of this statistical analysis focused on the geography and spatial distribution of applicants. Several rounds of analysis were performed, starting more broadly to examine all applicants together before breaking them into smaller groups based on specific criteria. The process roughly followed this trajectory for each lottery year:

All applicants → All Area 2 applicants → Waitlisted kindergartners/waitlisted ED → Area 2 hotspots

For the first three steps of each lottery year analysis, a grouping analysis was used. For the last step of each lottery year analysis, a hotspot analysis was used. These are explained in more detail in the "Methods" section.

The first step was designed to provide a basic understanding of how all applicants relate to each other spatially, including where clusters might exist, where external factors (physical, economic, etc.) might influence likelihood to apply, and where in the County interest might be most potent. Focusing in on specific groups in subsequent steps further refined this understanding and guided the development of recommendations for the board to consider.

Methods

For this analysis, we compared TMS applicant data against two different "backdrops."

The first was a simple basemap of DeKalb County's geography (seen in maps on pg. 19, 21, and 23).

The second involved juxtaposing TMS's data against demographic metrics partitioned by census block group, which is the lowest geographical division the census offers. Within these block groups, we compared TMS data against each block group's percentage of non-white households and low-moderate income households.[§]

[§] In this analysis, a "low-moderate" income household is any household that (a) qualifies for federal benefit programs according to the United States Dept. of Housing and Urban Development, and (b) earns 50%-80% of the metropolitan region's Area Median Income. Adjustments were not made based on family size.

One important note: these data do not indicate how many eligible *children* there are living in these block groups, but rather function as a proxy for understanding where more eligible children (based on these qualities) might live. For example, it would be inaccurate to say with certainty that more economically-disadvantaged children live in a census block group where the share of low-moderate income households is higher, but it is reasonable to assume that there is a higher likelihood that more low-moderate income children live there based on the concentration of low-moderate income households.

Our analysis relied on two geospatial analysis techniques. The first and principal technique used was a basic "grouping analysis," which agglomerates discrete data into groups based on specific variables. A calculation is performed to determine to what degree each variable explains the randomness of the distribution. If a variable has a higher score in the grouping analysis output, that means that the distribution is less likely to be random based on this quality.

For example, grouping analyses that assess a data distribution based on physical geography (x,y coordinates), % nonwhite in their census block group, and % low-moderate income in their census block group, may have been "influenced" more by one variable than another. It is reasonable to conclude that a data distribution with a high score[**] in the % nonwhite category may retain the legacy of social grouping policies that have affected nonwhite people. These could include segregation of African-Americans, the presence of immigrant communities, or another racial dynamic that could emerge with further study.

In other words, the numerical scores of each grouping analysis may correlate with human decisions and policies. The higher the score, the less likely the distribution is due to random chance based on the variables examined.

The second geospatial analysis technique was a "hotspot" analysis, which identifies the concentration of applicants in specific jurisdictions relative to the concentration of other jurisdictions around them to determine where significant "hotspots" and "cold spots" are located. This analysis was performed to understand where interest is highest per capita outside of the Priority Area 1 designated by TMS's charter.

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[**] In statistical nomenclature, this is called the R2 (r-squared).

General Geospatial Statistics Findings

Though there are significant nuances to each distribution, a few general findings emerge.

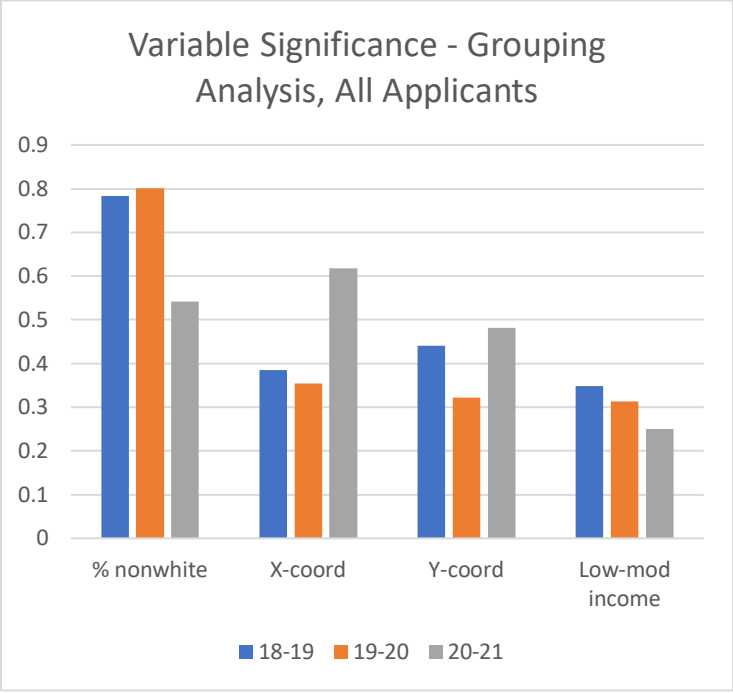
Grouping analyses performed on all applicants revealed that each distribution could be explained to a rather large degree by the % nonwhite rate across census block groups in DeKalb County (Figure 1). In other words, when determining applicant clusters, the applicants had more in common regarding the percentage of nonwhite households than other variables assessed. The 2020-21 application year was the only outlier in this analysis.

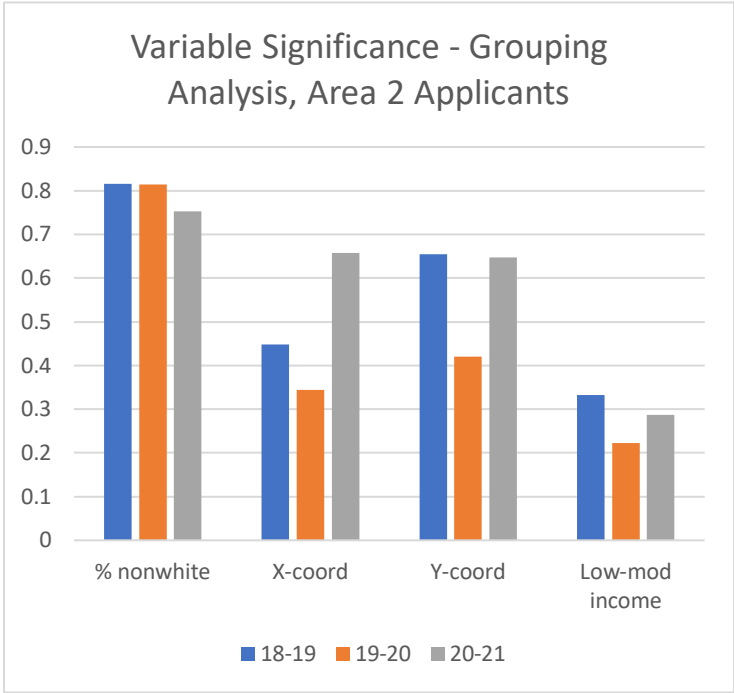
Grouping analyses performed on only Area 2 applicants revealed the same findings (Figure 2). Here, each distribution could be explained by the % nonwhite rate across census block groups, even 2020-21.

Geography, measured by X and Y coordinates, had a mixed effect on the groupings of applicant distributions, with 2020-21's groups being most explained by geographical location.

Interestingly, almost no grouping analyses could be heavily explained by the % low-moderate income rate across census block groups in DeKalb County. This finding could indicate that this rate may be fairly randomized across census block groups in DeKalb County. Past policy structures could support this hypothesis, given that laws and regulations governing spatial patterns have largely focused on other factors, like race.

Figures 1 and 2. The degree to which variables explain the lack of randomness in the distribution, across all years assessed.



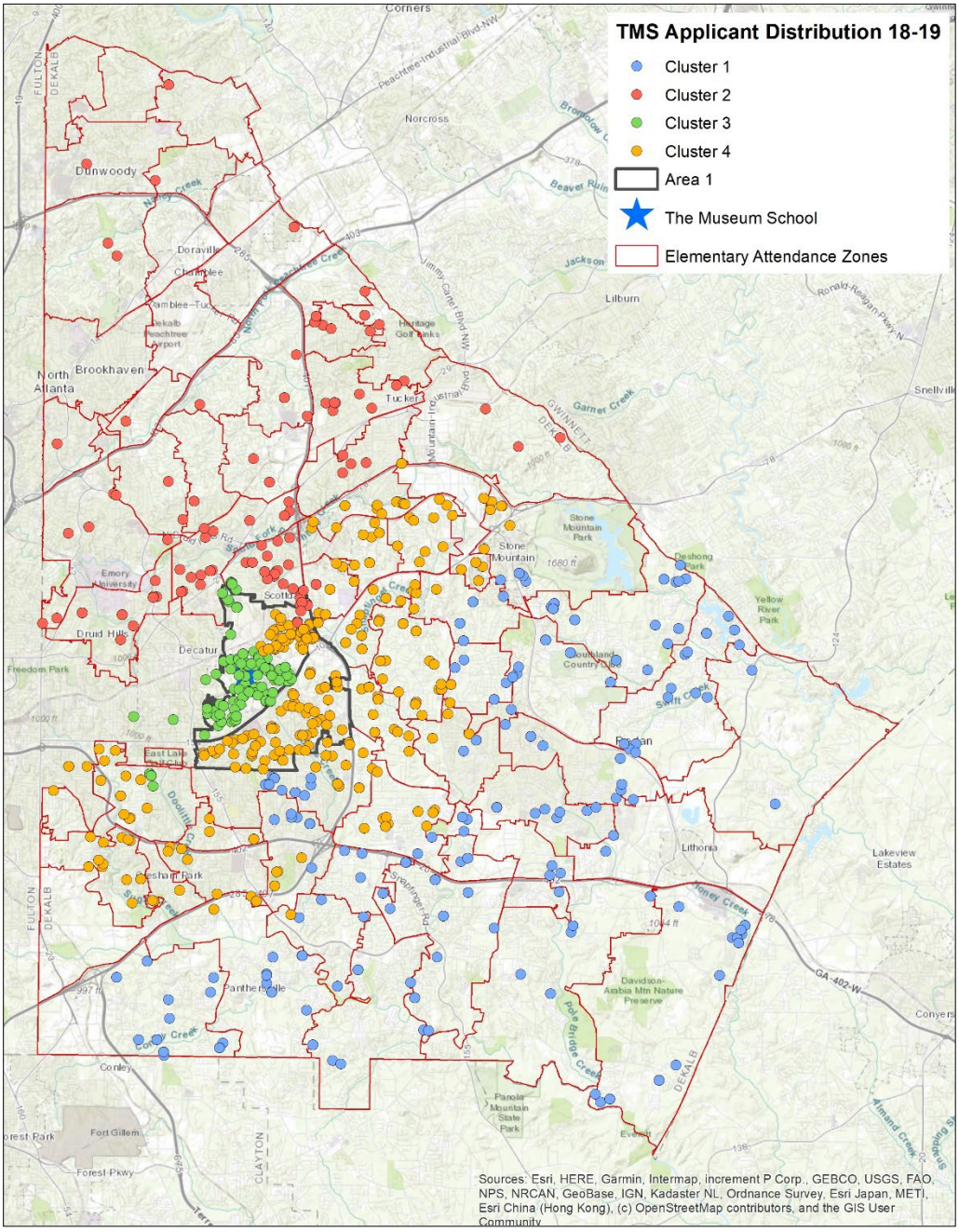


General Geospatial Statistics for 2018-19: All Applicants, Area 2 Applicants

The tables and maps below show the grouping analysis for all applicants and Area 2 applicants for the 2018-19 lottery. Statistics from the grouping analysis are also presented.

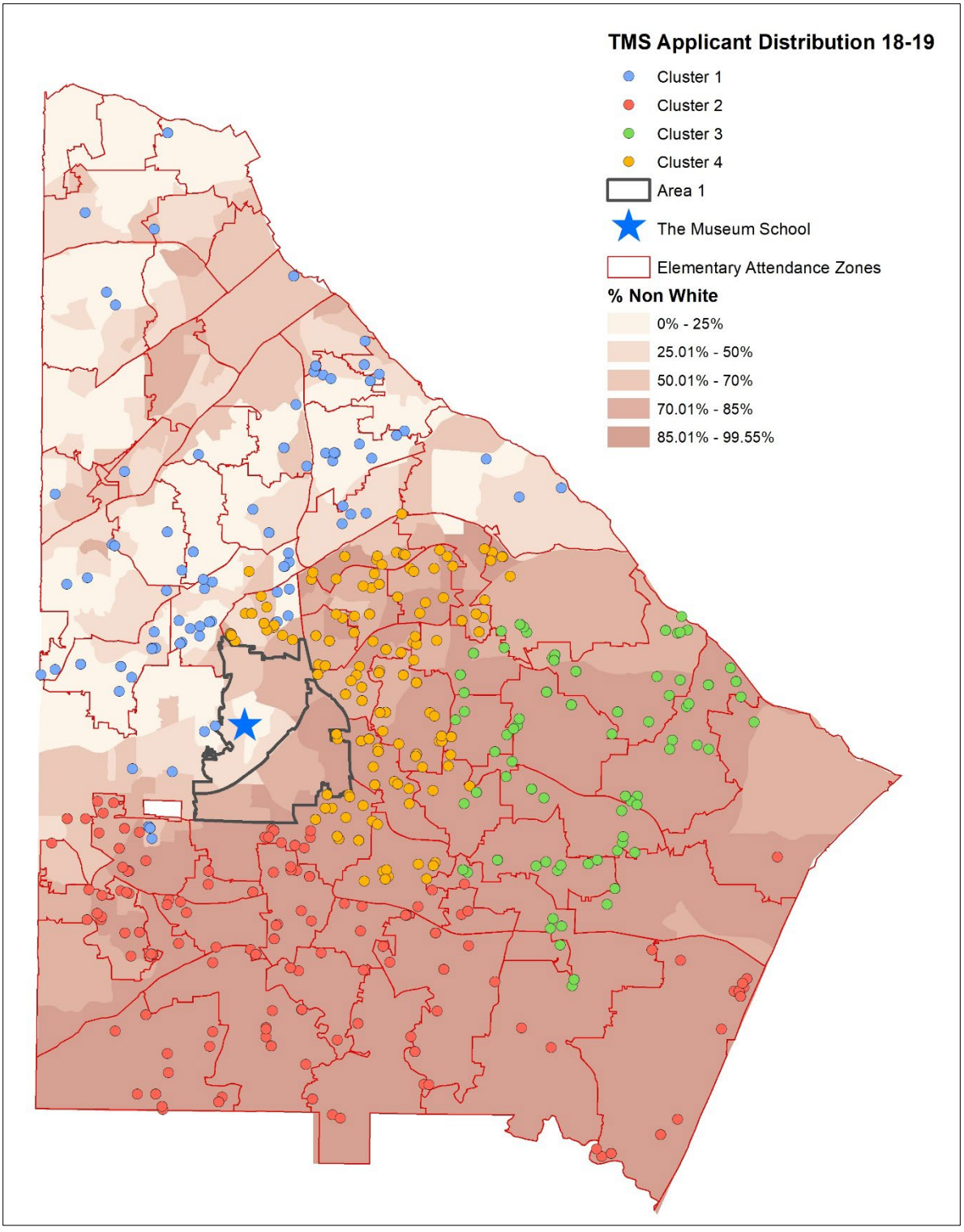
Variable	R-Squared
% non-white	0.78
Y-coordinate	0.44
X-coordinate	0.39
% low-moderate income	0.35

All 2018-19 Applicants, depicted against DeKalb County Basemap



Variable	R-Squared
% non-white	0.82
Y-coordinate	0.66
X-coordinate	0.45
% low-moderate income	0.33

Area 2 2018-19 Applicants, depicted against % nonwhite by block group

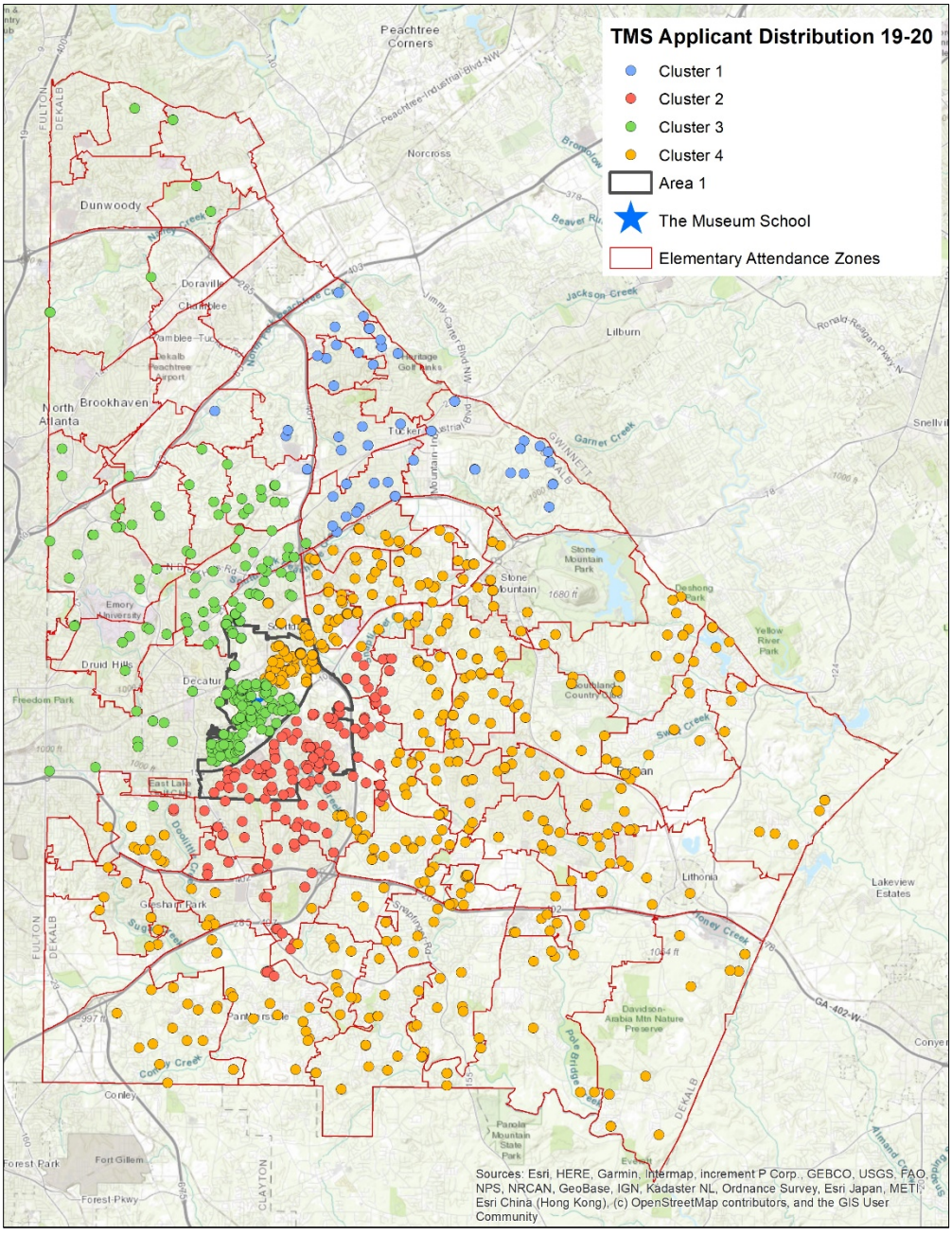


General Geospatial Statistics for 2019-20: All Applicants, Area 2 Applicants

The tables and maps below show the grouping analysis for all applicants and Area 2 applicants for the 2019-20 lottery. Statistics from the grouping analysis are also presented.

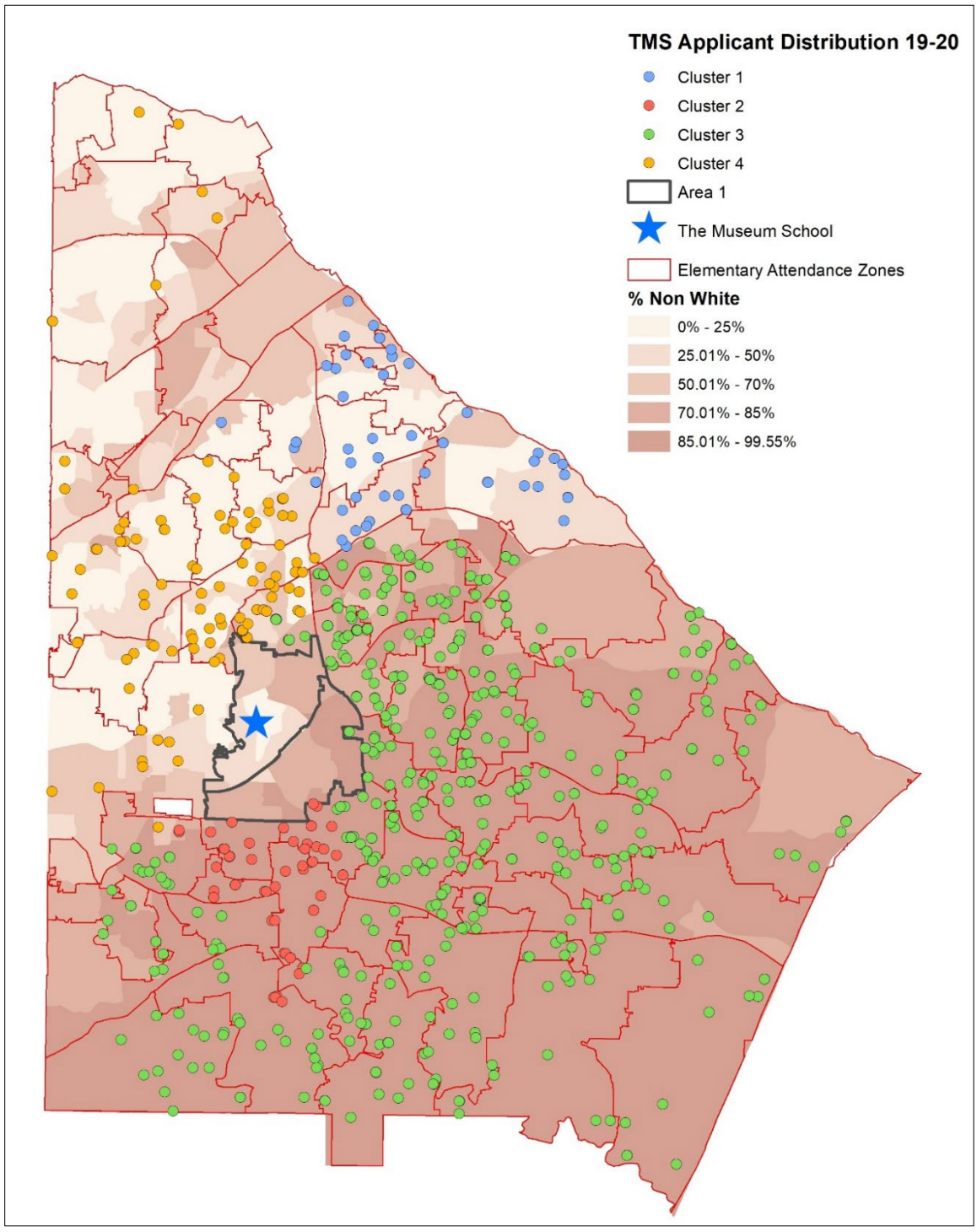
Variable	R-Squared
% non-white	0.80
X-coordinate	0.35
Y-coordinate	0.32
% low-moderate income	0.31

All 2019-20 Applicants, depicted against DeKalb County Basemap



Variable	R-Squared
% non-white	0.81
Y-coordinate	0.42
X-coordinate	0.34
% low-moderate income	0.22

Area 2 2019-20 Applicants, depicted against % nonwhite by block group

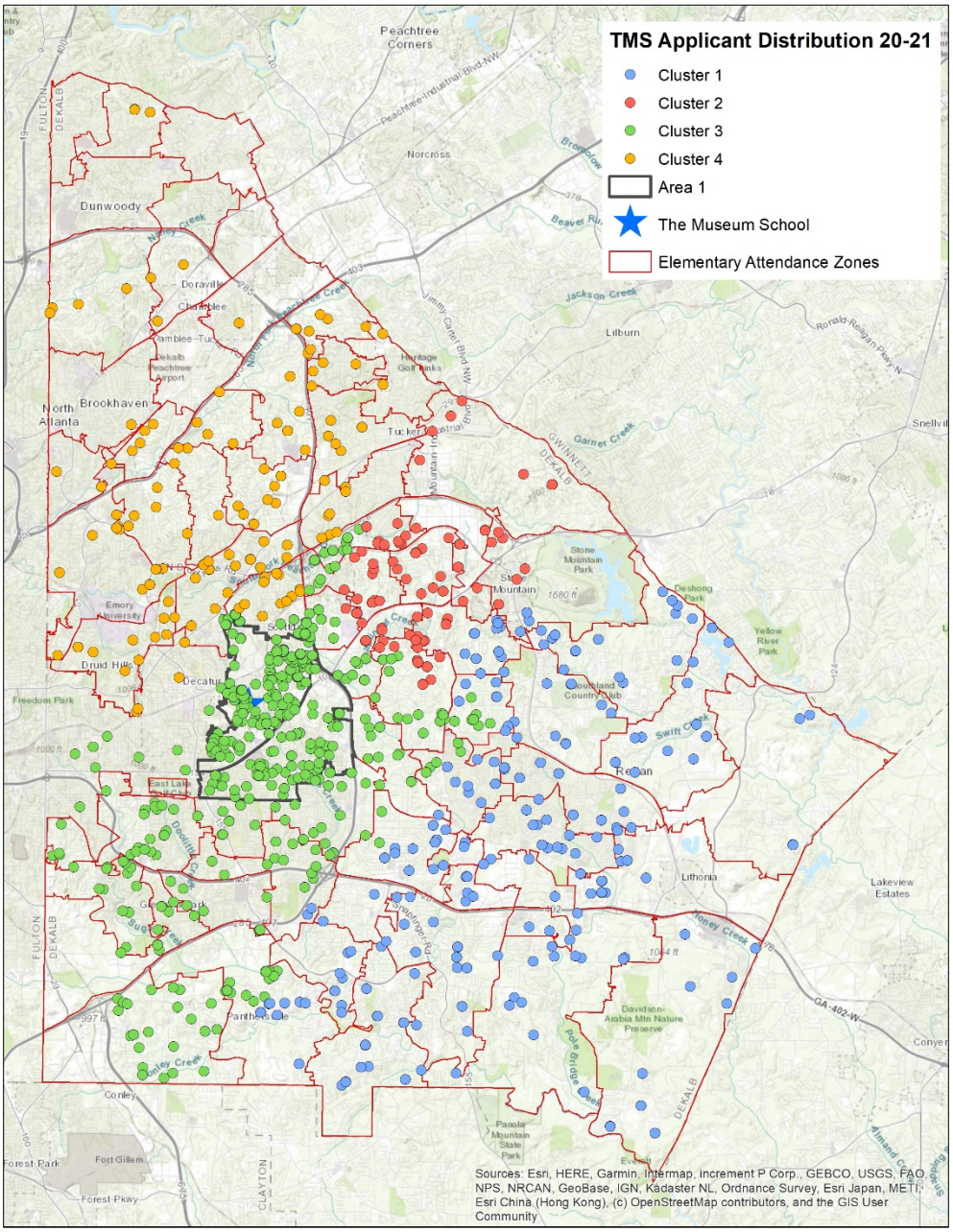


General Geospatial Statistics for 2020-21: All Applicants, Area 2 Applicants

The tables and maps below show the grouping analysis for all applicants and Area 2 applicants for the 2020-21 lottery. Statistics from the grouping analysis are also presented.

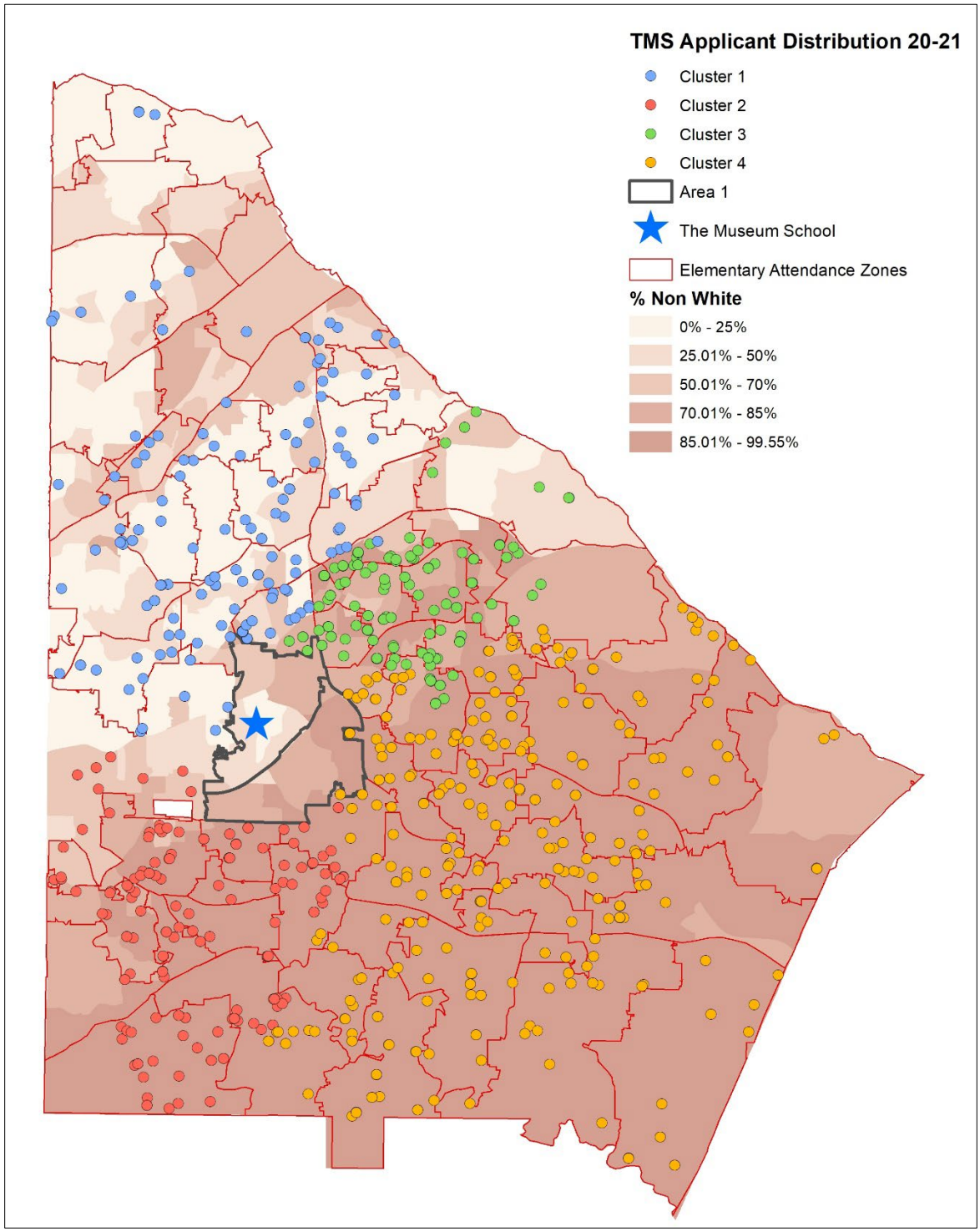
Variable	R-Squared
X-coordinate	0.62
% non-white	0.54
Y-coordinate	0.48
% low-moderate income	0.25

All 2020-21 Applicants, depicted against DeKalb County Basemap



Variable	R-Squared
% non-white	0.75
X-coordinate	0.66
Y-coordinate	0.65
% low-moderate income	0.29

Area 2 2020-21 Applicants, depicted against % nonwhite by block group



Specified Geospatial Statistics Findings: Waitlisted Kindergartners

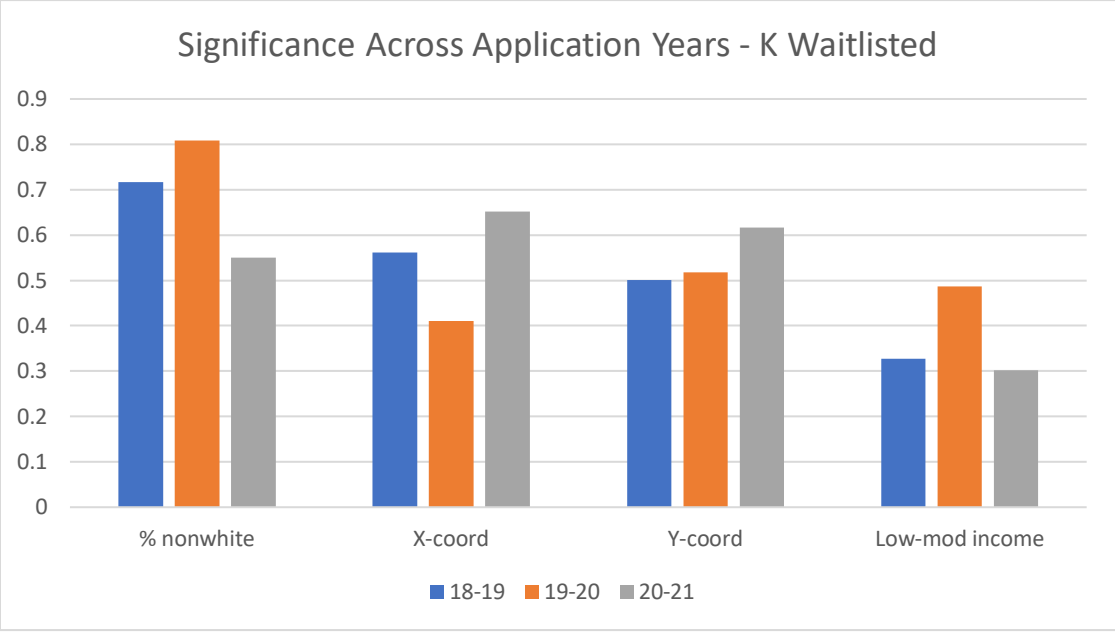
After performing grouping analyses on the larger applicant pools for each year, more specific grouping analyses were performed on relevant subsets of applicants. Because kindergartners remain the single largest group of newly admitted students, their distribution's randomness could provide interesting insights into how to expand equity through TMS's application lottery. We specifically looked at waitlisted kindergartners to understand **who is not being chosen**, in order to provide information on what should change.

Following trends from the larger applicant pools, grouping analyses performed on waitlisted kindergartners revealed that most distributions could also be explained by the % nonwhite rate across census block groups in DeKalb County (Figure 3). Similarly to the larger distributions, the 2020-21 application year proved to be an outlier, again suggesting that something about this distribution is different.

Geography had a mixed effect on the groupings of applicant distributions. 2020-21's group of waitlisted kindergartners can be most explained by geography.

The % low-moderate income variable had more sway on these distributions than any other distribution assessed to this point. This variable appears more significant in the 2019-20 group of waitlisted kindergartners, though it still falls short of heavily explaining the patterning of the distribution.

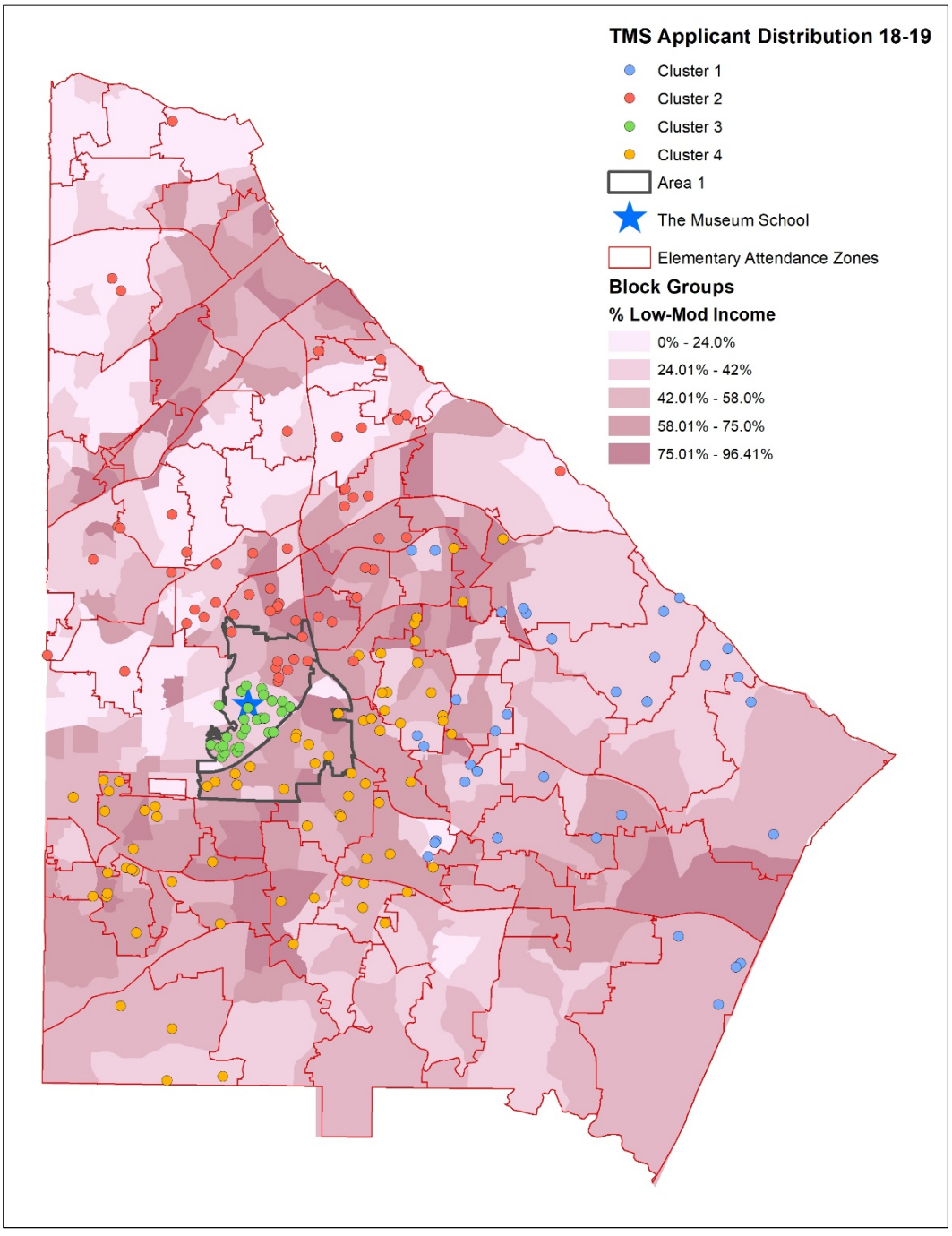
Figure 3. The degree to which variables explain the lack of randomness in the distribution, across all years assessed.



The tables and maps below show the grouping analysis for waitlisted kindergartners across all three years assessed. Statistics from the grouping analysis are also presented.

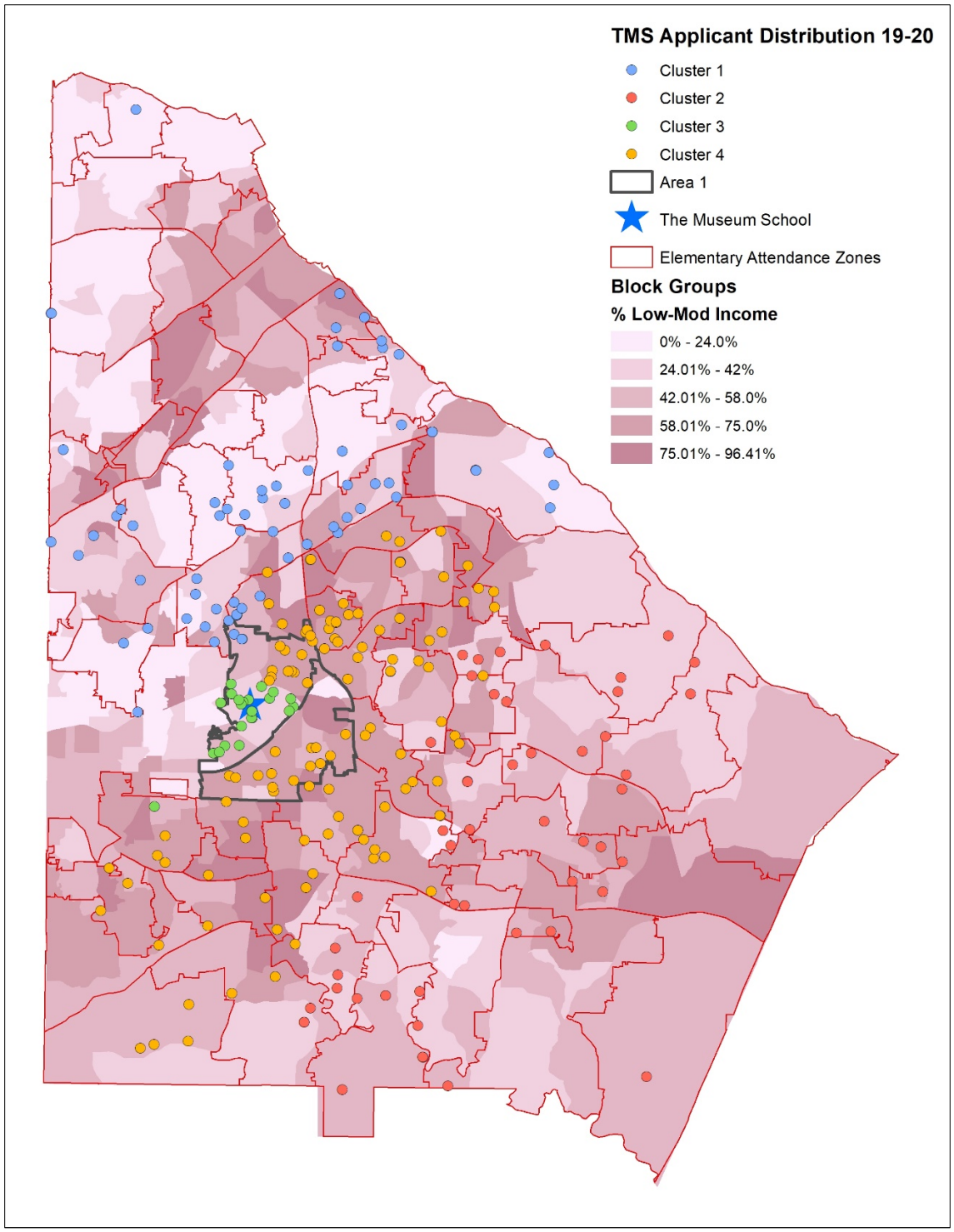
Variable	R-Squared
% non-white	0.72
X-coordinate	0.56
Y-coordinate	0.50
% low-moderate income	0.33

2018-19 waitlisted Ks, depicted against % low-moderate income in DeKalb County block groups



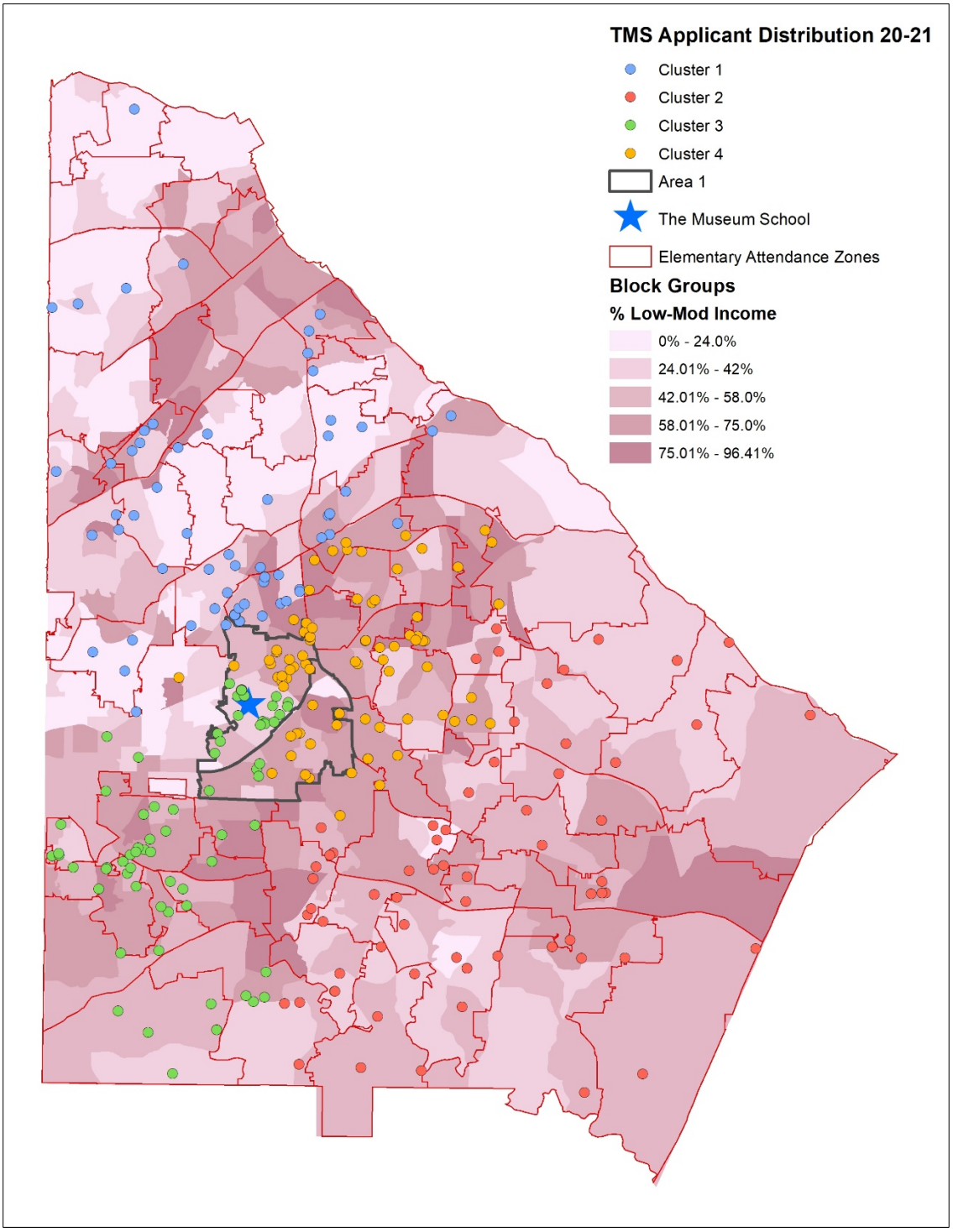
Variable	R-Squared
% non-white	0.81
Y-coordinate	0.52
% low-moderate income	0.49
X-coordinate	0.41

2019-20 waitlisted Ks, depicted against % low-moderate income in DeKalb County block groups



Variable	R-Squared
X-coordinate	0.65
Y-coordinate	0.61
% non-white	0.55
% low-moderate income	0.30

2020-21 waitlisted Ks, depicted against % low-moderate income in DeKalb County block groups



Specified Geospatial Statistics Findings: Waitlisted ED Students

Grouping analyses were also performed on waitlisted students who claim economically disadvantaged status. This assessment was performed last for two reasons. First, the order of preferences seemed important to follow; given that the weight for ED students fluctuates based on need, these distributions could be confounded by other non-spatial variables. Therefore, other variables were tested first. Second, because of the other preferences and the logistics of accepting new students (i.e. more kindergartners are accepted than any other grade level), the mechanics of ED students not selected might rely on other factors beyond their ED status.

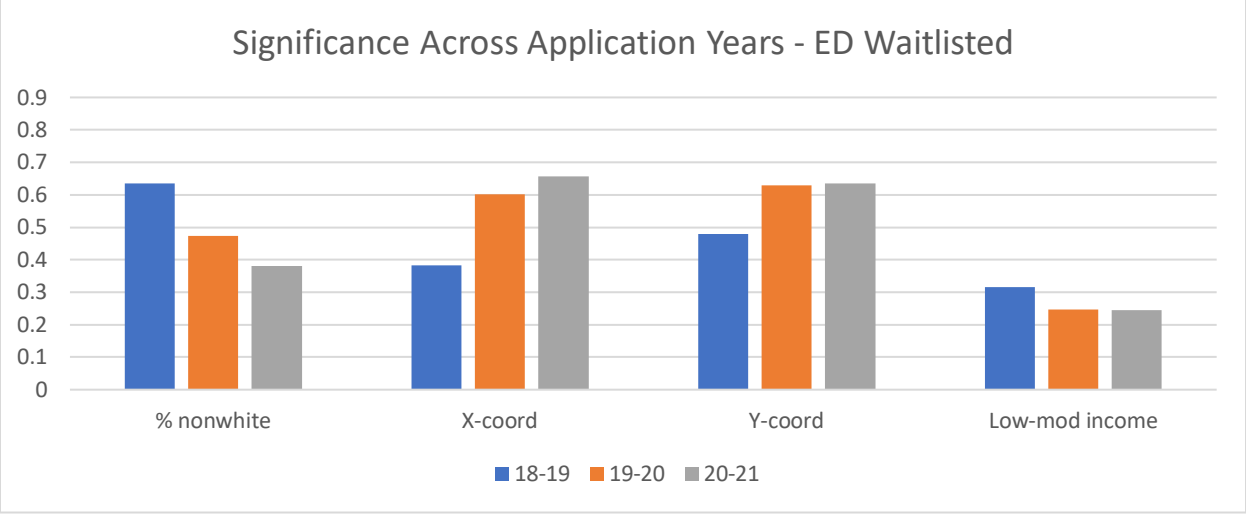
Even with these caveats, it was important to understand—after other analyses were performed—which variables could be influencing the distributions of ED students who were not selected.

The significance of assessed variables for waitlisted ED students diverges quite a bit from previous assessments. The % nonwhite variable has significantly reduced significance in both 2019-20 and 2020-21, which perhaps suggests that when the income variable is isolated (as it is by isolating the ED students from others) the spatial patterning would be in keeping with the spatial patterning of % low-moderate income prevalence in DeKalb County block groups.

Geography overall had the most significant affect on the groupings, especially in 2019-20 and 2020-21. In the absence of other strong variables (like % non-white has been in most cases), this makes sense, given that grouping analyses rely on points' "nearest neighbors" to form groups.

The % low-moderate income variable had the least amount of influence on these distributions, even when compared to other distributions. This is particularly interesting given the ED status of all of the applicants and perhaps emphasizes the fact that low-moderate income families are more diffused throughout the county.

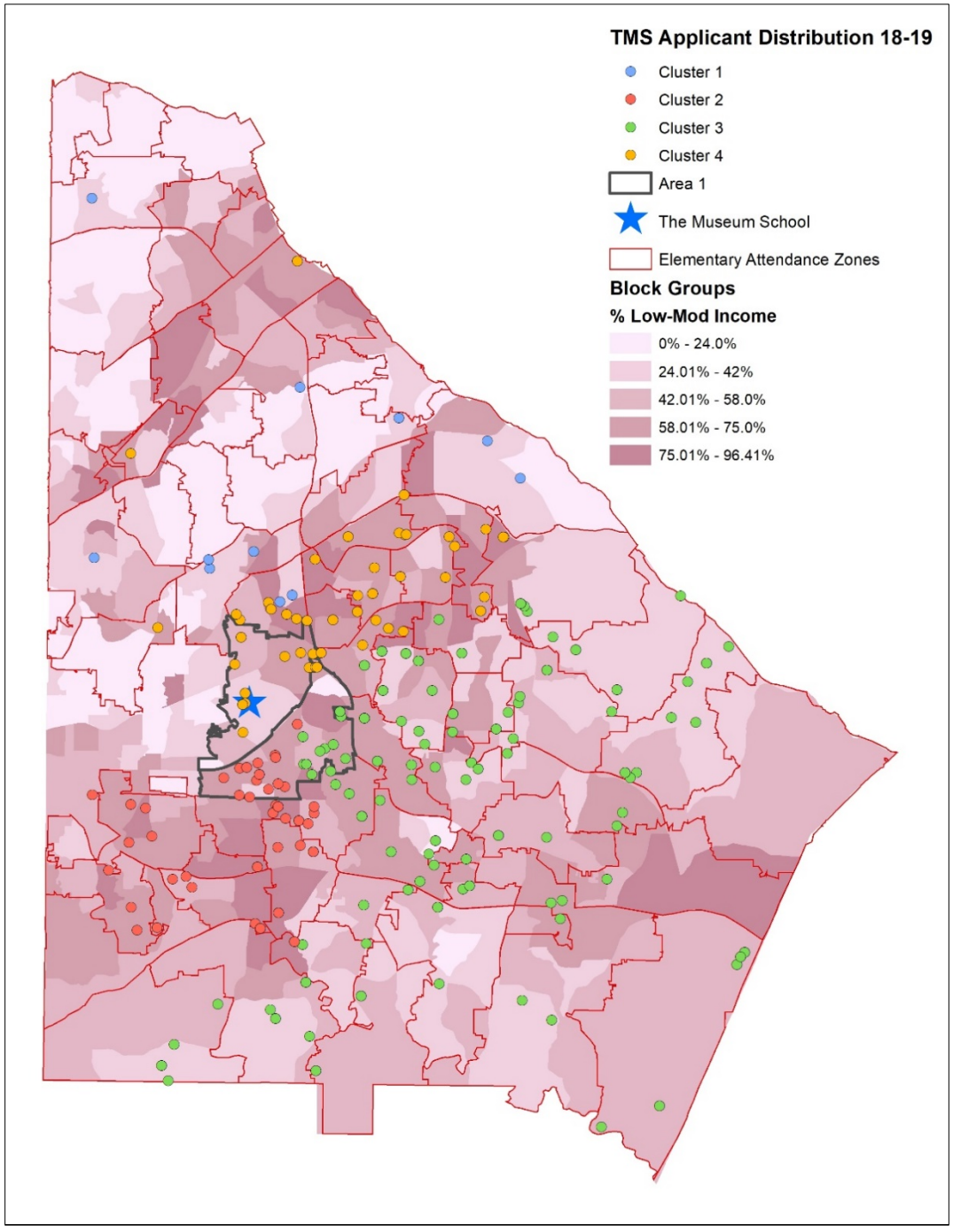
Figure 4. The degree to which variables explain the lack of randomness in the distribution, across all years assessed.



The tables and maps below show the grouping analysis for waitlisted ED students across all three years assessed. Statistics from the grouping analysis are also presented.

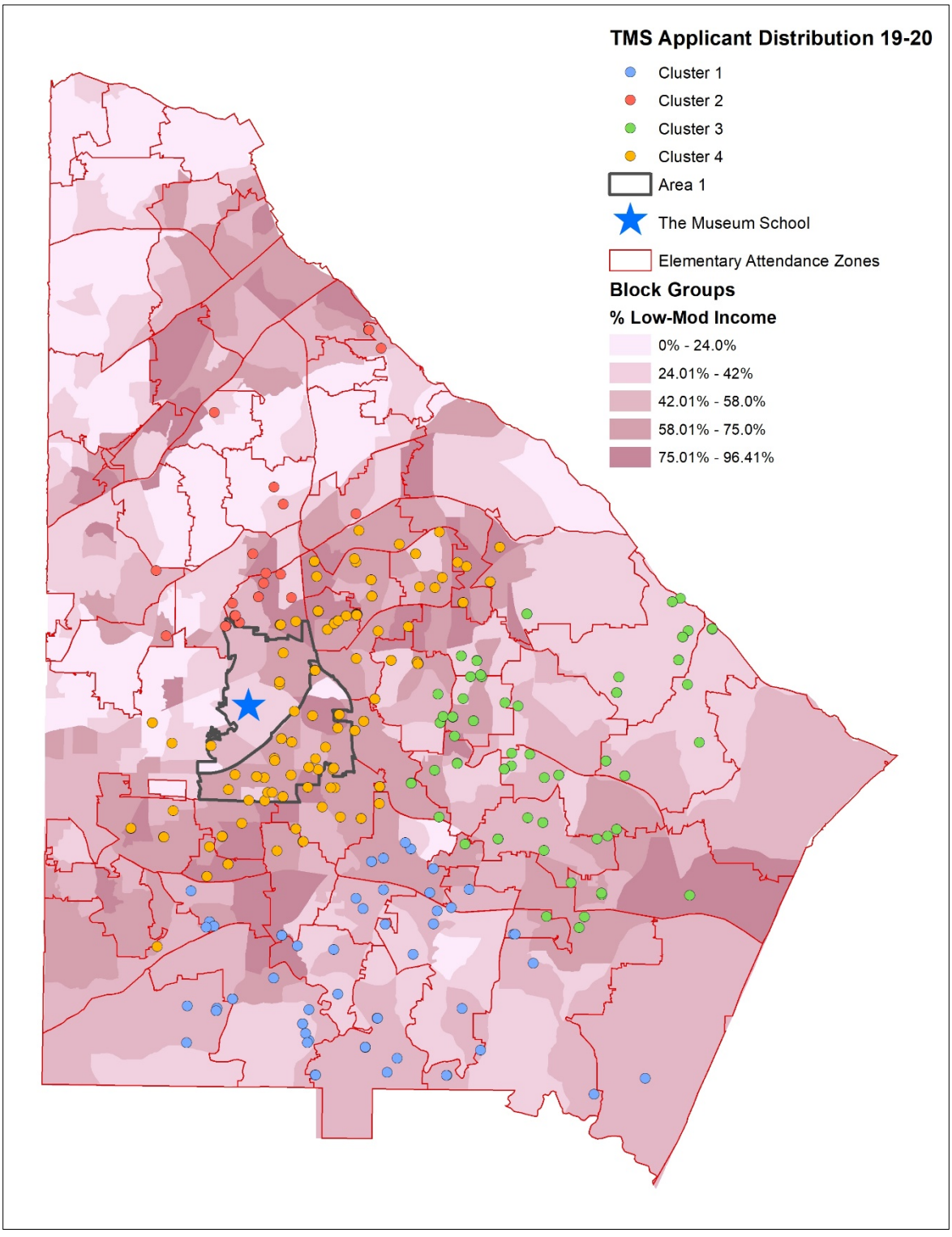
Variable	R-Squared
% non-white	0.63
Y-coordinate	0.48
X-coordinate	0.38
% low-moderate income	0.32

2018-19 waitlisted ED students, depicted against % low-mod income in DeKalb County block groups



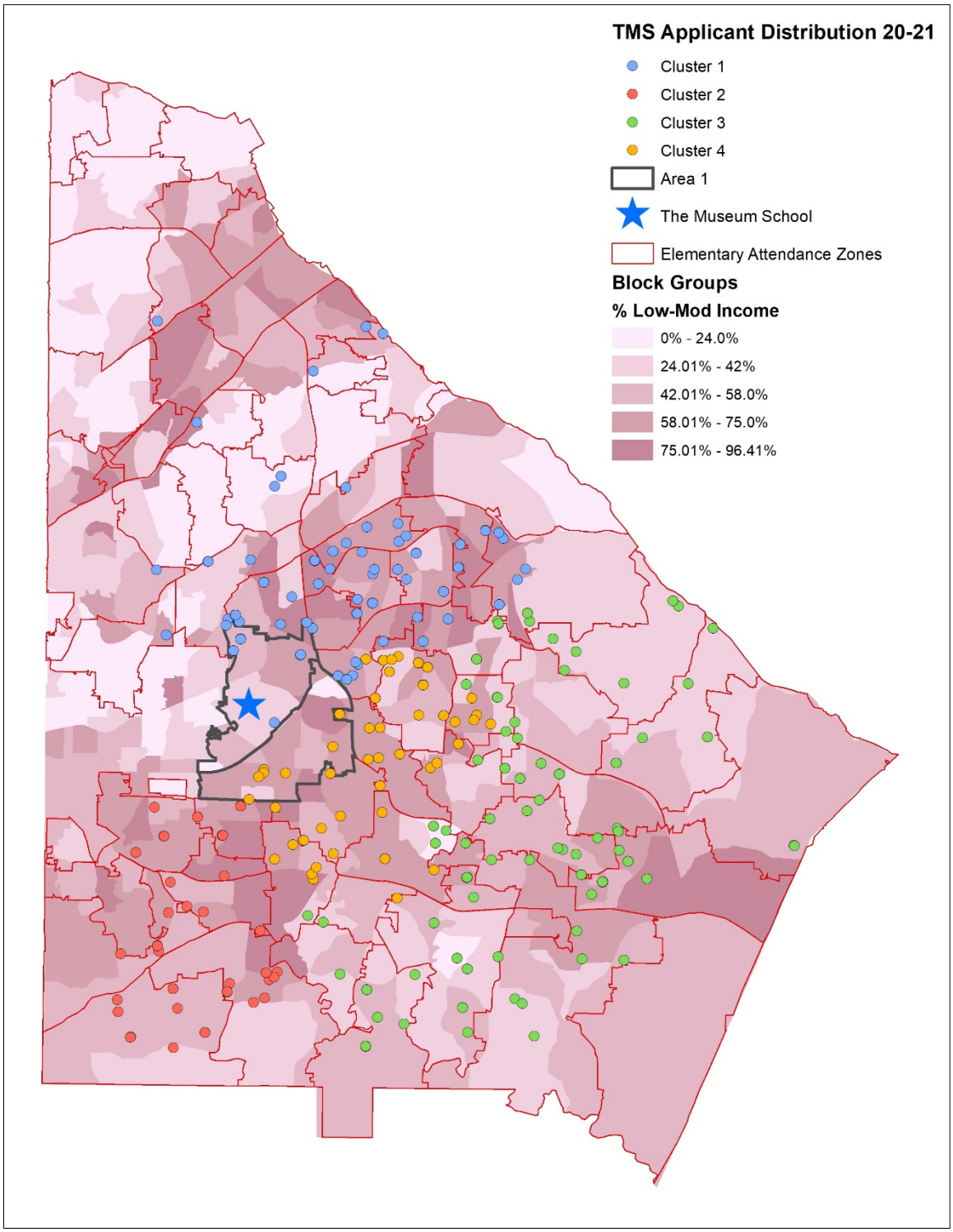
Variable	R-Squared
Y-coordinate	0.63
X-coordinate	0.60
% non-white	0.47
% low-moderate income	0.25

2019-20 waitlisted ED students, depicted against % low-mod income in DeKalb County block groups



Variable	R-Squared
Y-coordinate	0.63
X-coordinate	0.60
% non-white	0.47
% low-moderate income	0.25

2020-21 waitlisted ED students, depicted against % low-mod income in DeKalb County block groups



6 Summary of Findings and Process Critiques

These analyses can help TMS understand how to answer the foundational questions laid out at the beginning of this report:

- How are geography, spatial patterns, and social grouping influencing who applies to The Museum School?
- How are geography, spatial patterns, and policies affecting who is admitted to The Museum School?
- How can TMS change its policies to admit more economically disadvantaged students while keeping its geographical focus, community focus, and student-centered learning model?

It is important to note that while these data can provide a general sense for where prospective students might live, it cannot point to specific student populations that share certain characteristics. However, it is reasonable to assume that the data presented here function as an adequate corollary that can better inform TMS decision-makers about how to increase the share of economically disadvantaged students admitted to the school.

Summary of Findings

There are several major findings supported by the data that can help answer the foundational questions above. These are listed below.

<u>How are geography, spatial patterns, and social grouping influencing who applies to The Museum School?</u>

Overall, the geospatial distributions of each applicant pool are more than likely not random. The racial variable assessed has had the most influence on almost every distribution analyzed. Given the racial makeup of DeKalb County, this makes intuitive sense—the division between majority white and majority non-white census block groups is very clear-cut.

Yet what makes this interesting is the outliers, especially the grouping analysis performed on all applicants for 2020-21. This divergence from the trend suggests that something about this distribution is different. Judging by the fact that the Area 2 grouping for 2020-21 also found the '% nonwhite' variable to be significant, it is reasonable to conclude that a more random distribution *inside Area 1* could have affected the grouping analysis of all applicants. **In short, a change in tactics inside Area 1 could have led the distribution to be "more random," or less explained by the presence of one particular variable, especially race.**

Unfortunately, the low-moderate income variable assessed has not had a large influence on almost any distribution. While it has a higher degree of significance in smaller samples—such as the analyses performed on kindergarten and economically disadvantaged students—it still does not adequately explain the way students were grouped in the analysis. Unlike DeKalb County's distribution of people according to their race, the spatial patterning of low-moderate income households is more diffused throughout the county. Thus, it will be harder to determine specific geographies to target for recruitment of additional economically disadvantaged students, especially outside Priority Area 1.

How are geography, spatial patterns, and social grouping influencing who is admitted to The Museum School?

The vast majority of applicants selected are from Priority Area 1. Based on these three years of data, this does not seem likely to change in the future.

Within Area 1, some trends do emerge from the application data, many of which have less to do with spatial patterning and more to do with lottery policies. For example, over the past three years of application lotteries, TMS has admitted progressively more non-kindergartners. Many of these non-kindergarten applicants possess characteristics that have increased the number, though not the overall share, of diverse students to the school.

Application Year	# of ED / Total Non-K Students Selected	Percentage
2019-20	12/24	50%
2020-21	25/57	44%

How can TMS change its policies to admit more economically disadvantaged students while keeping its community focus and student-centered learning model? There are several policy levers that TMS can adjust in order to admit more economically disadvantaged students. These are dependent on various limiting factors, classroom and facility space being the most prominent of these.

First and foremost, the lottery weights themselves play a major role—though not the only role—in the number of economically disadvantaged students admitted. The lottery weight in '18-'19 was 175, considered to be quite high, while the lottery weights of both '19-'20 and '20-'21 were 10. These different weights could explain the drop in ED students accepted between '18-'19 and '19-'20, but it does not sufficiently explain the rise in numbers from '19-'20 to '20-'21. (And it is worth remembering that the *share* of new ED students did not increase between those two years.)

Whatever shift took place between '19-'20 and '20-'21 did yield a higher number of economically disadvantaged students admitted. The distribution of applicants also appeared "more random," or less affected by the predominant racial category in each applicant's neighborhood. Continuing this trend of expanding recruitment in specific sections of Area 1—especially across from Memorial

Drive—could bolster these efforts even further, though it remains to be seen if by doing so, TMS will satisfy the 4% requirement set by DeKalb County.

One additional point of note is that significant interest in TMS exists outside Area 1 (see Figure 5 on pg. 37), especially in the immediate vicinity of Area 1. Adding an adjacent attendance zone in areas with both high interest in TMS and a high percentage of low-moderate income households could help give priority to students who are economically disadvantaged while keeping TMS community-centered.

Fundamental Questions to Consider

The data and findings presented here are just one tool that TMS leadership can use to make decisions about the structure of the application process, prospective student outreach, and long-range planning. That is not to downplay their importance; on the contrary, these data have enormous potential to inform a more equitable process. However, it is not the data themselves that can foster greater equity. Instead, it is the decisions made based on the findings and trends that will have the greatest impact.

Because TMS operates on a lottery system, there will always be a certain degree of randomness in the number of students admitted in any preference category. This randomness doubly affects the preference for economically disadvantaged status, given that it is set variably from year to year with the intention to bring about a certain result. Even with a higher weight, it is still subject to randomness and volatility. This means that TMS leadership cannot rely on the lottery weight alone to yield a specific result; in order to increase the overall number *and* share of diverse students, a higher weight must be paired with other efforts to address the barriers diverse applicants might face.

To that end, these data give rise to several questions for TMS leadership to consider as they contemplate how to ensure they meet DeKalb County's requirement threshold for economically disadvantaged students (see Figure 6 on pg. 41).

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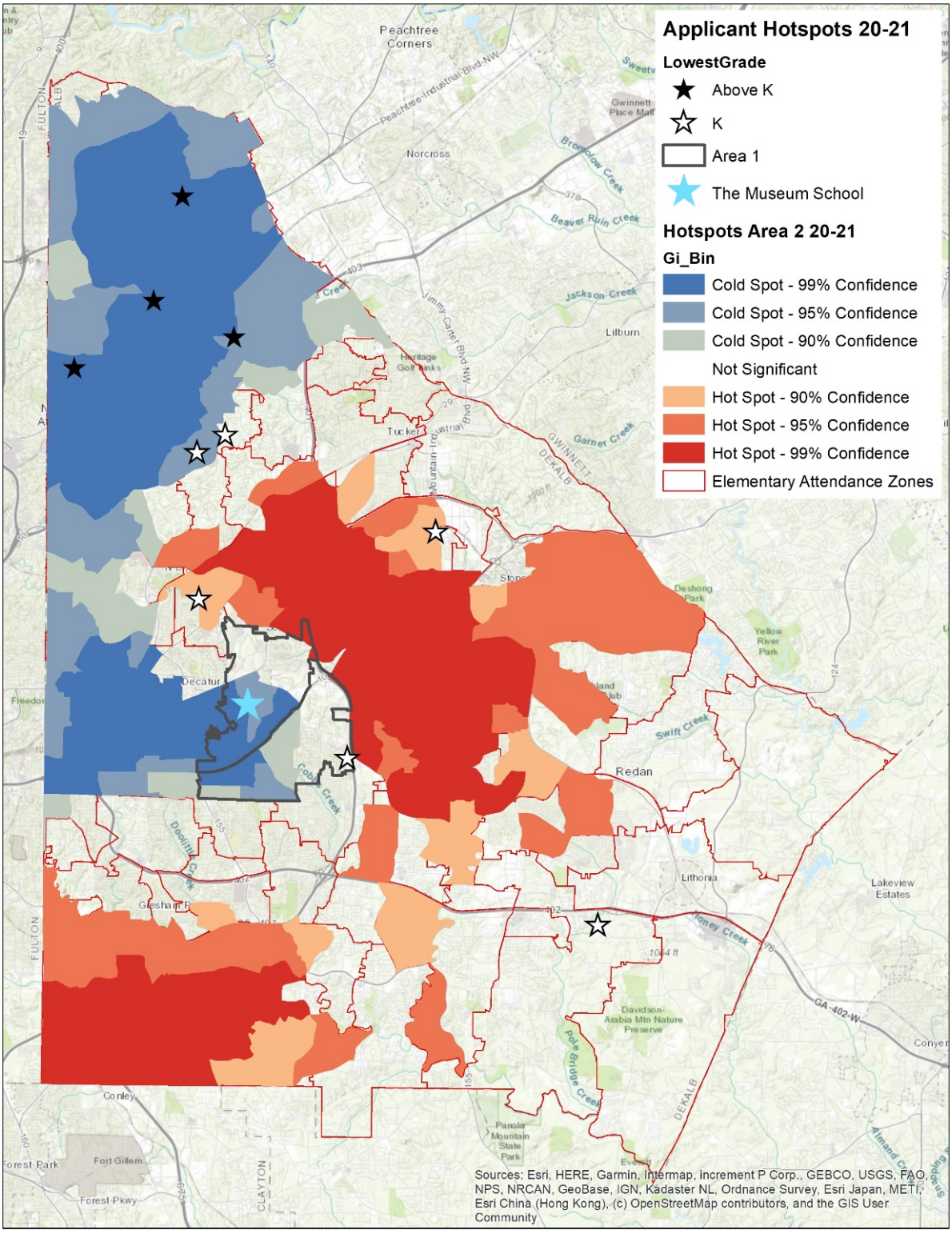
Figure 5. A map showing hot spots and cold spots for applicants, based on applicants from outside Area 1. (The cold spots in Area 1 should be ignored.) Hot spots at the 99% confidence level appear to the northeast of Area 1 in every application year.)



Sources of Error

Like any data analysis effort, these analyses and the data they are based on are subject to a certain degree of error. Errors may arise from random human mistakes, but they may also arise from flawed procedures that skew statistical calculations. Decision-makers should weigh the results against the errors to determine the course of action they deem most fit based on the information provided.

Opportunities for potential errors appeared in a few parts of this analysis, enumerated below.

Applicant information:
Potential errors in the submittal or processing of applicant information could skew the actual applicant numbers, especially in relation to their location.

- In each applicant pool, some applicants neglected to submit address information or submitted incorrect address information that could not be identified on a map. Those without address information were left out of geospatial analysis.
- Addresses that listed P.O. Boxes were also left out of geospatial analysis.
- For those with incorrect address information, assumptions about the applicant's domicile were made based on a series of online tools, including Google Maps.

Data compatibility:
Potential errors in the matching of parcel numbers with applicant address information have led to a few sources of systematic error.

- To analyze each applicant geographically, certain procedures had to be taken to ensure a non-biased measurement was analyzed. Each applicant was assigned to the parcel that corresponded with their address. The centroid of each parcel was taken to represent each applicant.
- Cases in which multiple applicants belonged to one household also presented difficulty. When joining the data, duplicates with the same parcel ID number were erased. These then had to be re-duplicated in the data set. Re-duplicating them caused the data points to "stack," which would have led to additional skew in the data. To reduce skew, these data points were adjusted away from being in "stacks."

7 Conclusion

This exercise has attempted to demonstrate the spatial patterning present among applicants to The Museum School across three years: 2018-19, 2019-20, and 2020-21. As explored in the previous section, findings from these data analyses could assist TMS decision-making in choosing policies and mechanisms to expand the enrollment of economically disadvantaged students. Below, we have presented several possibilities for small-scale and large-scale changes TMS could adopt.

Small-Scale Changes

- Student recruitment efforts. Members of TMS's Governing Board and staff have discussed their efforts to heighten recruitment efforts in sectors of Area 1 that are considered low-income. These efforts seem to have been fruitful for the 2020-21 application year and should be continued. To accompany these efforts, considerations around transportation and busing will need to be addressed.
- Board and staff recruitment efforts. A small but significant portion of admitted students in each year benefited from being children of board or staff members. Ensuring a diverse makeup of the board and staff could assist in bolstering the number of economically disadvantaged students. This could be accomplished through adding board seats or discussing term limits. This strategy would fluctuate in its significance from year to year, but based on this data, it could make a notable difference.
- Reconfiguration of weights. According to the charter, it is possible for TMS to set its own weights for prioritizing economically disadvantaged students over others. While this undoubtedly already happens, assigning this category an even heavier weight could further increase ED student numbers.

Large-Scale Changes

- Add an attendance zone. Expanding Area 1 by even one attendance zone could open possibilities for an increasingly diverse student body. The data clearly show areas of interest in Area 1's immediate vicinity. Further analysis could pinpoint the attendance zone that would be best suited for TMS's recruitment efforts.
- Add a satellite campus. It is clear that TMS's current facility is at capacity with the number of students currently enrolled. Given this constraint, it may be necessary or even timely to consider the proposal of a satellite campus. The creation of an additional facility could advance multiple equity goals at once, especially if a site is selected that would allow access to diverse and underserved populations (i.e. across Memorial Drive, or in any of the other lower-income census block groups identified).

- Consider replicating TMS's model in another community. While this recommendation would require major investment of time and money, it is worth considering, especially long-term. It would allow school leaders to demonstrate the advantages of TMS's learning model for a different community while maintaining the success of the original campus. There is certainly demand for it far beyond Area 1. While this would not help meet the immediate goal of the 2022 charter renewal, it may help secure the longevity of TMS.

These are just a few of the solutions TMS could advance. TMS leaders should continue to monitor the trends present in the data as they implement any or all of these recommendations. It is our hope that the insight provided by this data analysis can help TMS decision-makers determine effective ways to meet their goals for equity among their student body and continue TMS's mission of providing comprehensive, innovative, and interactive education for its students.

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Figure 6. A potential decision-making flowchart for how TMS can approach DeKalb County's requirement for schools to be comprised of 4% economically disadvantaged students.