# Report Overview

The Districtwide Boundary Analysis seeks to understand the degree to which current school boundaries in Montgomery County further MCPS's objectives to facilitate equitable and optimal outcomes in facility use, student diversity within schools, student proximity to schools, and stability of student assignments. The study furthers MCPS's engagement efforts from Spring 2019 and continues to involve community members to understand the spectrum of challenges towards creating more meaningfully integrated, diverse, accessible, and culturally responsive schools within the district.

This report builds off of the analysis and engagement conducted during Phase 1 of the Districtwide Boundary Analysis, which is documented in the **Interim Report** published in March 2020.

# The Districtwide Boundary Analysis

In light of increasing enrollment and demographic shifts in recent years, the MCPS Board of Education (BOE) adopted a resolution in January 2019 directing the Superintendent to review existing school boundaries.[1] Following a period of public engagement led by MCPS in the spring of 2019, the Districtwide Boundary Analysis began in the fall of 2019, led by the WXY consultant team.

The need for this analysis is underpinned by changing conditions in the school system and the county. Some of the key reasons MCPS initiated this study include:

- **Overcrowded schools:** Over half of all MCPS schools are overutilized, meaning student enrollment exceeds program capacity. Enrollment is expected to continue to increase in coming years.

- **Changing demographics:** MCPS's student body as a whole is increasingly diverse. The school system has seen an increase in the proportion of Hispanic, Asian American, and African American students in the last 20 years. However, neither racial nor socio-economic diversity are evenly distributed across the district.

- **Challenges related to school proximity:** Variations in geography and transportation networks across the county foster complex conditions with regard to school proximity. Excluding enrollment in magnet schools and choice programs, approximately 45% of students districtwide do not attend the school closest to them.

- **Shifting programming needs:** As demographics change and total enrollment grows, the district's programmatic needs also change. For example, increasing enrollment of students whose first language is not English raises the need for ESOL (English for Speakers of Other Languages) programming. Other impacted programs include Special Education, Pre-K/Head Start, and Class-size Reduction (CSR) elementary schools.

Guided by the four factors—referred to as lenses throughout this report— outlined in Policy FAA (utilization, diversity, proximity, and assignment stability), this analysis has sought to provide the BOE with insights and findings to address these and other challenges in future planning related to school boundaries in MCPS.

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1 Note: after an upward trend since the 2007-2008 school year, enrollment declined for the 2020-2021 school year due to COVID-19.

# Phase 1 Overview

Spanning fall 2019 through spring 2020, Phase 1 included data analysis, benchmarking, and public engagement, and culminated in March 2020 with the publishing of the Districtwide Boundary Analysis Interim Report. Over 2,200 community members took part in a combination of area-wide public meetings, small group meetings with underrepresented groups, and stakeholder interviews.

A broad range of insights emerged from the Phase 1 analysis, including:

- Each school level presents unique challenges and opportunities in terms of school boundaries. MCPS middle schools have particular challenges with student proximity, high schools are projected to face dramatic overutilization by 2026, and elementary schools present the most disparity within the four lenses of analysis.

- Geography (including population density and proximity to key traffic corridors like Interstate 270) is an essential component of school boundaries with impacts on a variety of metrics throughout the MCPS District.

- The district's two consortia present unique planning considerations, including high rates of racial and socio-economic dissimilarity in the Downcounty Consortium (DCC), and greater challenges with proximity within the Northeast Consortium (NEC).[1]

- The shape and structure of attendance areas in MCPS play important roles in the consideration of school boundaries. For example, Cluster boundaries may contribute to racial and socio-economic isolation, and island assignments tend to decrease racial/socio-economic isolation while increasing distances traveled to school.

Additionally, through benchmarking, the analysis compared MCPS to six other districts across the country: Charlotte-Mecklenburg Schools (CMS), Duval County Public Schools (DCPS), Fairfax County Public Schools (FCPS), Gwinnett County Public Schools (GCPS), Houston Independent School District (HISD), and Wake County Public Schools (WCPS).

Many insights also came out of Phase 1 Engagement, which have informed our approach to engagement and analysis during Phase 2. These include:

- There were conflicting views about the importance of this study, and the priorities MCPS should follow in adjusting school boundaries in the future.

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1   Dissimilarity is a statistical measure of how unlike a school is from a group of its peers (i.e. 3 closest schools). Dissimilarity is expressed as a value between 0 and 1 – where 1 is the most dissimilar. For a full explanation of dissimilarity and its use in this analysis, please see the Interim Report (page 136, 207).

- Due to challenges reaching underrepresented groups, broader engagement insights are not fully reflective of the demographics of the district. Small group meetings to engage underrepresented communities often resulted in quite different priorities or key themes than those raised in areawide public meetings.

- One recurring theme across the community engagement process was the importance of proximity to schools. Many parents' emphasis on this lens has informed the modeling approach in the Phase 2 analysis which limits the modeling to analyzing only boundary changes based on contiguous school zones and does not model new island assignments.

- There were conflicting views on the role diversity should play in school boundaries, as well as a range of assumptions about the trade-offs between diversity, proximity, and assignment stability. These interrelationships were further explored during Phase 2 analysis.

For a full summary of the insights from Phase 1 analysis and community engagement, please see the Phase 1 Overview of Insights. Readers are encouraged to browse the insights from Phase 1 for context to complement their understanding of this report.



*Participants in a table discussion at a regional public meeting at Gaithersburg High School on December 4, 2019 (photo credit: Rodrick Campbell)*

# Phase 2 Overview

Phase 2 of the Boundary Analysis builds off the analysis and engagement conducted during Phase 1.

## Analysis

The analysis of each of the four lenses during Phase 1, paired with insights gained through public engagement and guidance from MCPS, informed our approach to analysis in this phase. Building off the individual analysis of each of the four lenses during Phase 1, this phase focuses on the intersections between utilization, diversity, proximity, and student assignment stability.

To understand these interrelationships, we built models that test the impacts of balancing utilization, diversity, and proximity by simulating hypothetical school boundaries. The models help us understand and attach impact estimates to questions like:

- What kinds of improvements are possible to achieve (within certain parameters)?

- Can MCPS improve multiple factors at once (e.g. reduce distance to school and improve utilization; or improve utilization while reducing socio-economic and racial dissimilarity between nearby schools)?

- How many students would be impacted through boundary changes while making these improvements?

Using models as tools to analyze these questions, we can better estimate the effects between utilization, assignment stability, proximity, and diversity measures in MCPS. The five models examined in this report are:

- **Utilization A:** Improving Utilization Within Existing Cluster Boundaries

- **Utilization B:** Improving Utilization Between Neighboring Schools (does not adhere to existing cluster boundaries)

- **Diversity:** Calibrating Demographic Dissimilarities While Reducing Utilization

- **Proximity A:** Prioritizing Distances to School While Reducing Utilization

- **Proximity B:** Optimizing Distance to School Then Calibrating Utilization

The models demonstrate that it is possible to produce boundary plans that result in improvements to multiple critical indicators while maintaining existing proximity to school, and current assignment policies, and programs.
**Section 2: School Boundary Models** outlines our methodology to modeling, explains in depth what a model is and how it works, and shares key findings from this analysis.

## Engagement

The Phase 2 Engagement process was shaped both by public input during Phase 1 and the constraints of the COVID-19 pandemic. At the center of the process was the Interactive Boundary Explorer (IBE), an online platform allowing users to learn about the Boundary Analysis and its key lenses, and explore the data themselves through maps, tables, and other data visualizations. The IBE was used as a catalyst for virtual engagement, and as a tool for collecting public input directly through a survey on the website.

Many participants during Phase 1 engagement stressed the importance of data access and transparency in this process. Some requested the ability to interact with the data themselves in order to pair higher-level district trends shared in our Phase 1 analysis with concrete statistics about their schools and other schools in the district. In response to this, the IBE was modified to allow users to easily look up the statistics for any school in the district, and then compare those statistics to Cluster and districtwide averages; and to integrate data layers used in the Districtwide Boundary Analysis, so that stakeholders can test their own assumptions about current boundaries in MCPS and relate their lived experiences to the data.

In addition to ongoing engagement with the IBE by individual users, the Phase 2 engagement process included:

- 2 public webinars (October 20 and 22)

- 1 areawide virtual community discussion (October 28)

- 5 small group meetings with underrepresented groups

- Student engagement: 3 short engagements, and 2 virtual discussion events

The COVID-19 pandemic posed both constraints and challenges during this phase of engagement. The virtual nature of the interactive tool lent itself to engaging participants safely and without physical contact. It was developed to provide a more robust set of resources and a survey instrument so that it could exist as a self-contained engagement platform, rather than a tool designed for use in live meetings with the support of a facilitator. Features were added such as help videos, guided exercises, and a digital survey for collecting user input.

While the design of the interactive tool could be adapted for the constraints of promoting health and safety amid COVID-19, the pandemic presented challenges to the dissemination of the tool and the engagement of underrepresented groups. This engagement process presented barriers for community members with less access to technology, and/or less comfort with or skills to navigate data and engage in online platforms. Some community groups who we partnered with as part of the targeted engagement process in Phase 1 reported that the residents

they work with (including low-income families, immigrant communities, and racial minorities) were overwhelmed with the many challenges and stressors of COVID-19, including virtual learning and the reopening of schools. This likely contributed to low turnout at small group sessions targeted toward these groups during this phase.

The survey data from the IBE provides an interesting set of insights about participants' priorities related to school boundaries, and their insights about where exist the greatest challenges and opportunities to improve boundaries. The IBE resources were well-utilized: thousands of users watched help videos on the website, over 700 attended or watched webinar orientations to the tool, and we received over 2,100 survey responses, as of December 1. However, survey data show that tool users were not fully representative of the county's population. Approximately 54% of respondents reside in the southwest region of the county (Bethesda, Chevy Chase, and Potomac), 40% identify as White/Caucasian (another 29% chose not to identify their race), and the great majority of respondents were parents of past, present, or future MCPS students (64%).

Despite challenges with recruitment, this process of engagement yielded many interesting insights, including comments from areawide and small group discussion-based events, and the input of over 400 student participants who took part in virtual student engagement activities and provided feedback through a combination of virtual discussions and the IBE surveys.

An overview of engagement activities and insights can be found in **Section 3: Community Engagement.**

# Key Findings: Analysis

Outlined below is a set of key findings that emerged from the five models analyzed in the Districtwide Boundary Analysis. These findings, and the assumptions that shaped the models, are explored in further detail in Section 2 of this report: **School Boundary Models**.

**1. Significant improvements to utilization are possible by making targeted boundary changes across the district.**

- These improvements are achievable while redistricting fewer than 10% of students, a benchmark for large-scale redistricting plans. *(See Modeling Approach, page 29)*. Model 2 (Utilization B) is able to completely eliminate underutilized schools and highly overutilized schools.

- The CIP identifies thresholds for addressing overutilization, based on number of students enrolled in excess of a school's capacity. Models 1-4 all find boundary plans that reduce the number of schools requiring capital action if 7.5-10% of students are redistricted. Models 2-4 eliminate the need for capital action in all middle and high schools. The analysis in the Interim Report showed that based on 2019-2020 data, 3 middle schools and 8 high schools required capital action based on MCPS metrics. These improvements are summarized in the appendix on page 164.

- In Models 1-4, these utilization benefits are possible by increasing average distances to school by a maximum of an eighth of a mile for elementary and middle schools, and less than a quarter of a mile for high schools. For most models, the change in distances is far less, close to zero.

- No models had negative impacts on school diversity. In fact, most models were able to make the demographics of the most socioeconomically and racially isolated schools more similar to their three nearest neighboring schools by about one to two or more percentage points on average, a modest improvement.

**2. Cluster boundaries are an impediment to addressing capacity challenges, especially in the most overcrowded schools.**

- When Cluster boundaries are maintained (Model 2. Utilization B), the share of elementary schools that are either highly overutilized or underutilized is 6%, compared to zero when Cluster boundaries are removed. The figure is 8% for middle schools and 4% for high schools.

- Both utilization models have nearly identical impacts to distances to school, suggesting that Cluster boundaries do not help maintain short distances to school. In fact, Model 4 (Proximity A) suggests that existing cluster boundaries may be an impediment to distances to school.

**3. It is possible to improve school utilization and diversity at the same time when adjusting boundaries between neighboring schools.**

- Model 3 (Diversity) is able to make the demographics of the most socioeconomically and racially isolated schools, representing about two in five schools, more similar to their three nearest neighboring schools by about two to four percentage points on average.

- This benefit can be achieved while also increasing the number of elementary schools in the target utilization range from only 32% of schools to 43% of schools. At the middle and high school levels, Model 3 is able to completely remove underutilized and highly overutilized schools.

- These benefits are achieved when rezoning between 7.5 and 10% of students and with modest impacts to distance to school. On average, distances to school in Model 3 (Diversity) increased by an eighth of a mile for elementary schools, a tenth of a mile for middle schools, and a quarter mile for high schools.

**4. Based on the results of all five models, it is challenging to improve distances to school while improving other metrics, particularly utilization. Across school levels, we observe minimal increases to the districtwide average distance to school up to a quarter mile, though generally increases to the districtwide average were less than an eighth of a mile. This suggests that existing school boundaries may be minimizing distances to school at the expense of other lenses.**

- Significant improvements to utilization and diversity metrics are possible while only slightly increasing average distances to school. These improvements can be achieved between adjacent schools without reliance on any new island assignments and without increased reliance on district transportation.

- While localized decreases in distance to school are possible, at the district scale, the average distance to school increases slightly or stays the same across almost all model runs. This is in part due to the objective of rezoning fewer than 10% of students across any model run.

- There is insufficient capacity to allow for each student to attend their closest school. Rezoning all students to their closest school would result in approximately 18.6% of elementary students being rezoned, 25.0% of middle school students being rezoned, and 23.8% of high school students being rezoned (Model 5. Proximity B). Even after rezoning this large quantity of students, minimal improvements to both utilization and proximity across the district are only possible at the middle school level.

**5. Based on the analysis of benefits and impacts to diversity metrics across all five models, existing middle and high school boundaries create more demographic disparities than boundaries based on distance alone. At these school levels, there exist opportunities to improve distances to school while improving diversity metrics, though at the expense of assignment stability.**

- Model 5 (Proximity B) examines the effects of redrawing school boundaries based only on distance, with the exception of island assignments which are preserved in part. When this change is made, the socioeconomic and racial dissimilarity of schools compared to their neighboring schools decreases by 4-6 percentage points for the most isolated middle and high schools.

- These improvements to diversity metrics at the middle and high school levels are larger than those achieved by Model 3 (Diversity), which explicity prioritizes diversity metrics. Model 3 found improvements of 2 and 3 percentage points on average for the most isolated middle and high schools, respectively.

- Significantly, Model 5 (Proximity B) has significant negative impacts to utilization and assignment stability. As such, the model is not likely the best choice to pursue. However, the model does highlight the existence of opportunities to improve distance to school while improving diversity metrics.

**6. Based on the analysis of Models 1-4, changes at a comprehensive, districtwide scale can achieve much greater improvements than small localized changes.**

- Since 2012, up to 2.5% of students per school level have been redistricted in any given year. Most years between 2012 and today, fewer than 1% of students are redistricted. While desirable from the perspective of assignment stability, this incremental and localized approach may not be able to adequately respond to rapid shifts in enrollment and considerable utilization challenges.

- Models 1-4 produce hypothetical boundary plans that address challenges across the district and show significant opportunity to improve utilization, while redistricting no more than 10% of students.

# Comparing the Models

Table 1 summarizes the key statistics that emerged from the five models analyzed in the Districtwide Boundary Analysis.

*Table 1 — Model Benefits and Impacts*

| Model | Utilization | Diversity | Proximity | Assignment Stability |
|---|---|---|---|---|
| **1. Utilization A** | ✚ **Moderately better** <br> School utilization range <br> • ES: 80-130% <br> • MS: 74-120% <br> • HS: 82-122% | ◉ **Minimal change** <br> Racial dissimilarity change of most isolated schools <br> • ES: -2 pp <br> • MS: No change <br> • HS: No change | ◉ **Minimal change** <br> Change in average distance to school <br> • ES: +1/10 mi <br> • MS: No change <br> • HS: No change | ⌣ **Moderately worse** <br> Up to 10% change across school levels |
| **2. Utilization B** | ★ **Significantly better** <br> School utilization range <br> • ES: 82-119% <br> • MS: 92-103% <br> • HS: 100-106% | ◉ **Minimal change** <br> Racial dissimilarity change of most isolated schools <br> • ES: -1 pp <br> • MS: -1 pp <br> • HS: -1 pp | ◉ **Minimal change** <br> Change in average distance to school <br> • ES: +1/16 mi <br> • MS: No change <br> • HS: No change | ⌣ **Moderately worse** <br> Up to 10% change across school levels |
| **3. Diversity** | ★ **Significantly better** <br> School utilization range <br> • ES: 80-120% <br> • MS: 89-106% <br> • HS: 97-108% | ★ **Significantly better** <br> Racial dissimilarity change of most isolated schools <br> • ES: -4 pp <br> • MS: -2 pp <br> • HS: -3 pp | ⌣ **Moderately worse** <br> Change in average distance to school <br> • ES: +1/8 mi <br> • MS: +1/10 mi <br> • HS: +1/4 mi | ⌣ **Moderately worse** <br> Up to 10% change across school levels |
| **4. Proximity A** | ★ **Significantly better** <br> School utilization range <br> • ES: 90-120% <br> • MS: 94-108% <br> • HS: 99-107% | ✚ **Moderately better** <br> Racial dissimilarity change of most isolated schools <br> • ES: -2 pp <br> • MS: -2 pp <br> • HS: -1 pp | ◉ **Minimal change** <br> Change in average distance to school <br> • ES: +1/10 mi <br> • MS: +1/32 mi <br> • HS: +1/10 mi | ⌣ **Moderately worse** <br> Up to 10% change across school levels |
| **5. Proximity B** | ▬ **Significantly worse** <br> School utilization range <br> • ES: 46-158% <br> • MS: 76-120% <br> • HS: 61-142% | ★ **Significantly better** <br> Racial dissimilarity change of most isolated schools <br> • ES: -2 pp <br> • MS: -5 pp <br> • HS: -4 pp | ✚ **Moderately better** <br> Change in average distance to school <br> • ES: -1/32 mi <br> • MS: -1/8 mi <br> • HS: -1/4 mi | ▬ **Significantly worse** <br> Assignment change varies by school level <br> • ES: 17-18% <br> • MS: 23-24% <br> • HS: 22-23% |

pp = percentage points

We use five descriptive categories to compare the models:

1. ★ **Significantly better**
2. ✚ **Moderately better**
3. ◉ **Minimal change**
4. ⌣ **Moderately worse**
5. ▬ **Significantly worse**

These categories should be understood as relative to existing conditions and the other models' results, rather than as judgements on the importance of the lenses. We do not weigh whether one lens is more important than another and the model comparison table is not presented here nor intended as a scoring matrix.

# Key Findings: Engagement

Outlined below is a set of key findings that emerged from engagement activities during Phase 1 and Phase 2 . These findings are explored in further detail in Section 3 of this report: **Community Engagement**.

**1.  Access to data and transparency are strongly valued by participants.**

- During Phase 1, requests for greater access to the data used in this analysis and suggestions to create an interactive online tool informed our development of the Interactive Boundary Explorer (IBE).

- Digital and data tools (and the constraints of COVID-19) present challenges to reaching underrepresented groups, including mobile compatibility, data literacy/comfort, and a lack of localized engagement.

**2. Underrepresented groups are challenging to reach in MCPS, and their priorities may vary from more highly represented groups.**

- The majority of participants in areawide meetings and the IBE survey were White, residents of the Southwest of the district, and parents of MCPS students.

- Targeted engagement showed key differences in priorities among underrepresented groups (i.e. Latino/a communities, immigrant groups, African American, low- and moderate-income families, and those living in less represented regions of the county).

- Key differences in underrepresented groups include greater support for the regular review of school boundaries, a greater emphasis on the impacts of over- and underutilization, and greater emphasis on the importance of diversity.[1]

- MCPS should conduct further targeted engagement in boundary planning, keeping in mind that broader areawide engagement may leave out the perspectives of large groups of stakeholders.

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1    See Phase 1 Engagement Addendum Report for detailed comments and themes from small group meetings in Phase 1.

**3. Proximity and assignment stability are the highest priorities for the majority of Phase 2 participants. The models presented in this report suggest that it is difficult to improve proximity to school while adhering to reasonable parameters for assignment stability.**

- 75% of respondents to the IBE survey rate proximity to schools as "extremely important." Assignment stability is another priority for survey respondents, with approximately 70% rating minimizing the number of students impacted by boundary changes as "extremely important" *(see full survey results starting on page 99).*

- The models in this report suggest a strong trade-off between assignment stability and improving proximity: decreasing distances to school districtwide is not possible without rezoning a sizable amount of students (approximately 20%).

**4. Many participants associate improved diversity outcomes with large increases in distance traveled to school. The models presented in this report suggest it is possible to improve diversity between nearby schools, without significant impacts to proximity.**

- Among IBE survey respondents--47% of whom identify as White and 50% of whom reside in the Southwest of the county--diversity was the only measure that a significant proportion of respondents rated "very unimportant" (about 33%). Comments throughout engagement and other trends within the survey suggest this may relate in part to a perceived trade-off with proximity and assignment stability *(see full survey results starting on page 99).*

- The models in this report indicate that improvements to utilization and diversity can be made without major impacts to existing proximity and within reasonable parameters for student assignment stability.

- Notably, Model 3 suggests that diversity and utilization can be improved together, with minimal increases in distance traveled to school.

**5. Student engagement revealed the importance of student voice in school boundary planning in MCPS, and elicited key findings about students' priorities and experiences.**

- Student engagement was emphasized as a central part of Phase 2 engagement, with many students and student groups expressing a strong desire in Phase 1 and Phase 2 to participate in this process, and have their perspectives taken into account.

- Student discussion at virtual discussion events revealed a unique set of themes as compared to broader engagement in this process, including an emphasis on disparities between nearby schools and across the district and a greater emphasis on utilization and diversity as priorities.

- Students offered many insights about the unique challenges and opportunities at each school level, highlighting the ES level often as the level with the greatest challenges related to utilization and diversity, and the level where these lenses are particularly important. At the MS and HS level, students emphasized challenges with proximity, which can especially impact students living farther from school with fewer resources.

**6. IBE survey results suggest key differences in priorities across the district's geographic regions.**

- The priorities of respondents in the Southeast (Colesville, Fairland, and Burtonsville) and South (Silver Spring, Takoma Park, Wheaton, and White Oak) tended to vary the most from those in other regions, with a higher proportion of respondents rating "Balance diversity among nearby schools" as important or extremely important than the district as a whole, fewer rating proximity priorities as extremely important, and a greater proportion emphasizing utilization as important.

- Of survey results to date, region appears to be a greater factor in respondent's priorities than other demographic factors including race/ethnicity and role/relationship to MCPS.

- Given the relatively small sample size of respondents residing in areas outside of the Southwest, further research and outreach is recommended to understand variations in community priorities throughout the district.