Invitation for Bid: Equity Analysis of Home-Based Assignment Plan

Maximum funding: $150,000.00

Invitation for Bid Specifications

Home-Based Assignment Plan: Overview

Adopted by the School Committee in 2013, and implemented in school year 2014-2015, the Home-Based Assignment Plan was created to replace a 3-zone assignment system with the specific purpose of

- Increasing– and better balancing– access to quality schools, especially for students with the lowest-level of access (in 2013);
- Decreasing the average distance a student would travel;
- Protecting the diverse school communities we value today; and
- Increasing the likelihood a child will be in the same grade in the same school as other children nearby[1].

Importantly, the plan was designed to adapt to changes in school quality over time.

School choice lists are constructed based on student's home address (as if registering for K2) and always contain the closest:

- 2 top-tier schools
- 4 top- or second-tier schools
- 6 schools from the first, second or third tier

Every list also includes all schools within one mile from home, citywide options, and option schools, formerly dubbed "capacity" schools.

Families rank the schools they prefer. The assignment system contains several priorities including sibling preference, East Boston and Charlestown residence, and preference by registration round to name a few. This along with random number and seat availability are used for assignment either through an algorithm (used for nearly all assignment) or by assignment specialists (manual placement outside of assignment rounds).

Work specifications:

Boston Public Schools (BPS) seeks a consultant to perform an equity analysis of 2014-2017 Home-Based Assignment Plan data for all transition grades (K1, K2, 6,7,9) and students new to Boston both within our assignment rounds and outside of our assignment rounds (i.e. "late registration") and student transfer data, to determine whether:

1. **All students have equitable <u>access</u> to choose high quality schools (examination of the schools included on their Home Based list)**
2. **All students are equitably <u>assigned</u> to schools (examination of the schools to which students are actually assigned)**
3. **BPS student attend a school closer to home under this plan as compared the prior assignment plan.**

The successful bidder will include each of the following variables and their interactions in an effective analysis (this list is not exhaustive, other variables may be considered as well);

- Race/ethnicity
- Income-level
- Neighborhood
- Language group
- Special education status
- ELL status

To these ends, the consultant will consider:

1. Equity of Access to Quality
    - Students have access through the school choice process to high quality schools
    - Equitable access disaggregated by race, special program status (special education and English learner) and income status
    - Level of equity when analysis is done by tier one (high quality) ***seats*** available
    - Equity of pathways/feeder patterns from different elementary schools configurations (K0-1,K0-2, K0-3, K-5, K-6 etc.) to district elementary and middle schools
        - Are pathways and feeder patterns equitable by race and income?
        - Do historically marginalized students have less access to K-8s.

2. Probability (Likelihood) of Assignment
    - Access (high quality schools appears on students' school choice list) versus entrance to high quality schools (students are assigned to high quality schools)?
    - Where are seats available for new students - analyze by school, neighborhood, quality, etc.
    - Analysis of differential access to quality schools versus quality seats: Choice lists are based on access to schools, but ability to get into a school is based on access to seats.
    - Students attend high quality schools (impact of current policy on transfers).
    - Students have an increased chance of receiving one of their highest ranked schools as compared to the prior system.

3. Proximity to home

- How have school choice options changed as related to distance from home using the current policy versus the prior assignment system?
- Do students now attend schools closer to their homes?
- Distance x Quality: How far do students have to travel to find quality?
- Distance x Special Education Status (SWD Overlay)
- Distance x ELL Status (ELL Overlay)

4. Enrollment- overarching analysis of whole group and subgroups on all items.

- How many students get their choices (1st and subsequent)?
- Average choice number?
- How many students are administratively assigned? To which schools?
- How many administratively assigned students stay in that school versus transfer?
- Ultimately, where do students attend school?
- When do they transfer? Where do they transfer?
- What is the average transfer request rate? What is the average rate of granted transfers by school, neighborhood, ELL & Special Ed status, etc.?

We have the projected outcomes of implementing the Home-Base Assignment Plan around equitable access to high quality school by all demographic groups. And we have a preliminary analysis of a couple of years of K1 and K2 data. We need to analyze actual outcomes.

Boston Public Schools will provide the following:

- The successful bidder will receive 2010-2017 Home-Based Assignment Plan data including ELL and Special Education students for
  - All transition grades (K1, K2, 6,7,9)
  - Students new to Boston within our assignment rounds
  - Students new to Boston outside of our assignment rounds (i.e. "late registration")
  - Student transfer data
  - Student wait list data

- NOTE: This analysis does not include student-level performance data.

Minimum Requirements: Equity Analysis

All submitting Proposers must meet the minimum requirements in order to be considered as a responsive bidder.

- Proposer must have a minimum of five (5) years of experience providing statistical analyses and evaluation services within BPS and/or a similar urban public school district(s).
- Proposer must have a minimum of five (5) years of experience working in a BPS and/or a similar urban public school district(s).
- Proposer must have previous experience working with Boston Public Schools assignment data and/or a similar assignment data set from a similar urban public school district.

Timetable and Deliverables

Proposer must be able to complete initial report and analysis on a very tight timeline with the draft due no later than October 31, 2017, and an updated report ready for public sharing by November 15, 2017. The Proposer must be available to co-present with the Office of Engagement on December 6, 2017 at the Boston School Committee. Recommendations and additional questions from the public, BPS leadership, and Boston School Committee will be integrated into subsequent reports with the final report due no later than March 15, 2018. The final report must be family friendly (easily accessible by all stakeholders), document each area of the analysis, and include accompanying charts, graphs, and tables,

Bid Submission Materials

All bids must include 100% of the total services and submission materials listed in the bid specifications. All bidders must complete and submit a written response to each of questions in the attached **Invitation for Bid Questions** document. In addition, all bids must complete the attached **Invitation for Bid Budget Sheet** to provide price proposal for these services. Funding will be awarded to the lowest responsive and responsible bidder. If there are any questions, please email Lisa Harvey at lharvey3@bostonpublicschools.org. Responses will be delivered by email to all bidders.

Invitation for Bid Questions

1. Describe your proposed technical approach to the equity analysis, which describes how you will carry out the tasks outlined above. Please include specific examples for the following elements:

    a. **All students have equitable access to choose high quality schools (examination of the schools included on their Home Based list)**

        i. Equity of Access to Quality

b. **All students are equitably <u>assigned</u> to schools (examination of the schools to which students are actually assigned)**

   i. Probability (Likelihood) of Assignment

   ii. Enrollment- overarching analysis of whole group and subgroups on all items.

c. BPS student attend a school closer to home under HBAP as compared the prior assignment plan.

   i. Proximity to home

2. What is the number of years your organization has provided evaluation and data analysis services within BPS? If your organization has not provided evaluation and data analysis services within BPS, please provide the number of years that your organization provided this type of service in similar urban public school districts and name the school district(s).

3. Please describe any experience you have, if at all, with BPS (or other urban districts) school choice student assignment data.

4. Please provide a summary of your recent and relevant projects.

5. Include firm estimate of the fees to be charged and an estimate of expenses that would be incurred. Please include your hourly rate and an estimate of the number of hours you would require to complete the analysis and reports (A complete budget).

6. Attach resumes of all consultants who would be involved in the project.

7. Provide contact information of individuals at three organizations/school districts who have been your clients during the last eighteen months and whom we can contact as references.

All bids must include 100% of the total services and submission materials listed in the bid specifications. All bidders must submit a complete budget to provide a price proposal. Funding will be awarded to the lowest responsive and responsible bidder. Questions, contact Lisa Harvey at lharvey3@bostonpublicschools.org

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[1] From the District's cover letter to the EAC, for the Boston Public Schools: Improving School Choice - accompanying the MIT Report: Simulating Alternative School Choice Options in Boston (January 2013).

Proposed meetings/analyses/deliverables	Estimated number of hours required
Review for understanding of HBAP policy (Meeting with district)	~3
Regular evaluation updates	
Equity Analysis	
2 slide decks for School Committee presentations	
2 SC presentations	~8
Final report	
Analysis data files	
Debrief meeting	
Other items deemed necessary/desirable by bidder:	
Total hours:	

Boston
Area
Research
Initiative

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Boston Area Research Initiative (BARI) Bid for
"Equity Analysis of Home-Based Assignment Plan"

Submitted by
Daniel T. O'Brien & Nancy E. Hill

Boston Public Schools (BPS), like many other urban districts, has long utilized school choice and assignment as a way to reduce the extent to which public education reproduces the social inequities of a city that is residentially segregated along racial and socioeconomic lines. Such policies are imperfect, however. Although they may increase access to high-quality schools for some disadvantaged students and families and, in turn, diversify the population of any given school, they have the downside of forcing many students to travel long distances—as much as 10 miles!—each morning and evening. BPS' "home-based assignment system" (HBAP) was a bold and smartly-crafted attempt to provide parents with increased access to good schools, close to home, especially for those students with the lowest level of access. In theory, this would decrease travel distances while also safeguarding against the inequities that are inherent to a residentially-segregated city. Four years later it is now possible and essential to evaluate the extent to which it was successful in meeting these goals.

The Boston Area Research Initiative (BARI; project led by Profs. Dan O'Brien (Northeastern University) and Nancy Hill (Harvard Graduate School of Education)) will conduct an independent evaluation of HBAP by assessing its impacts on the district's equity goals, relative to what we would have expected from the previous 3-Zone system (3Z). For example, we will determine the extent to which students' access to high quality (Tier 1) schools (and seats) has improved between the 3Z and HBAP. We will look at equity of feeder patterns and the equitable access for those who enter the school district outside the normal choice process (Transfer students or late enrollees). We can examine equity in the likelihood of being assigned to a high quality school across demographic background, along with improvements in equity between 3Z and HBAP systems. We will determine whether students are in fact attending high-quality schools that are closer to home under HBAP compared to 3Z and the extent to which there is increasing equity across ethnicity, socioeconomic status. The central questions of this Invitation for Bid are ones that BARI has been interested in and working on with BPS for the last 5 years. We bring deep expertise and experience in the theories that drive equity and inequity in parental choice policies and that analytical tools necessary to parse and analyze data that are simultaneously embedded in schools, neighborhoods, and families overtime.

This bid is organized as follows: First, we summarize the qualifications of the BARI team, including our existing experience working with BPS on data-driven research-policy projects; second, we present the five-stage model that we have developed to identify the

potential entry points for inequities and plausible policy interventions in more detail. As we have already conducted analyses that might bring insight to the questions central to this bid, we will highlight some of those analyses. Third and final, we specify the work plan for conducting the evaluation. In addition, we elaborate how we see the work requested in this Bid as the beginning of a potential collaboration that addresses what a further set of questions pertaining to *why* inequities remain under HBAP and *how* they might be mitigated.

BARI's Experience/Relationship with BPS

BARI is an inter-university research and policy center co-located at Northeastern and Harvard Universities, with affiliated faculty and centers at five other local universities. BARI pursues urban research that advances scholarship and public policy, focusing on the opportunities created by novel digital data and technology, including administrative records and census data, and has worked extensively with local public agencies. These research-practice partnerships include: work with the Department of Innovation and Technology to translate data generated by basic city services into fully-documented forms that are ready for research, policy, and practice; a long-term evaluation of the City of Boston's 311 system with the Mayor's Office of New Urban Mechanics and the Office of Neighborhood Services; the pursuit of a community-oriented smart cities strategy with the Mayor's Office of New Urban Mechanics; and the examination of address-level patterns of disorder, crime, development, and fires with the Problem Properties Task Force.

The two investigators leading this Bid--Prof. Dan O'Brien of Northeastern University's School of Public Policy and Urban Affairs and Prof. Nancy Hill of the Harvard Graduate School of Education (HGSE)--have extensive experience with such work within and outside the auspices of BARI. In addition to our ongoing collaborations with offices in the Boston Public Schools, both Profs. O'Brien and Hill have worked with school districts across the country on a wide variety of topics and capacities related to the questions posed in this bid. Prof. O'Brien has previously worked with schools in Binghamton, NY on the interplay of home, neighborhood, and school in the social and academic development of students. Prof. Hill has worked with schools in districts across the nation. As examples, she has collaborated with Durham (NC) Public Schools, Madison (WI) Metropolitan School District, Pasadena (TX) Public School, and most recently she has been involved locally in research-practice partnership with the Medford Public Schools. In addition, Prof. Hill was on the advisory committee for establishment of the Education Data Research Center (EDRC) located at the Center for Child and Family Policy at Duke University's Sanford School for Public Policy. The EDRC developed a collaboration with the North Carolina Department of Public Instruction to house and analyze all public school data from across the state. Professor Hill's research has focused on parental involvement in education at the elementary and secondary levels, including the central role of school choice and preparing

children for schools. Combined, we have over 30 years of experience with research-practice partnerships with schools.

Our work with BPS on School Choice began in 2012 when BPS released a variety of data regarding 3Z in order to stimulate a public conversation on alternative approaches to school choice and assignment. At that time, BARI served a convening function for researchers from several local universities and research agencies, including researchers from Harvard University, MIT (including Parag Pathak and his then-student Peng Shi, the architect of HBAP), Tufts University, and Boston College, along with senior management from BPS, including Carleton Jones and Peter Sloan, who had been tasked with overseeing the effort to restructure school choice and assignment. Since HBAP's implementation, BARI has remained engaged through efforts led by O'Brien and Hill. Shortly thereafter, we constructed a fully-documented version of the 3Z choice data released during the public redesign, linked to external data wherever possible. Using this dataset, Hill advised a doctoral dissertation thesis by William Johnston (HGSE) that examined how families of different racial and ethnic backgrounds weight school characteristics differently when submitting choices. This included a close examination of the assumption that all parents desire high-quality schools close to home. The findings from these analyses were shared with Office of Planning and Analyses and with Operations, including Kim Rice, who was then the Chief Operating Officer. In addition, BARI has supported two doctoral students at Northeastern and Harvard Universities (Sarah Faude and Kelley Fong) through a research seed grant to conduct ethnographic interviews with parents about their school choice experiences; conducted quantitative surveys at welcome centers about how parents gathered information on schools and what factors mattered in their school choices; and pursued more recent analyses of choice decisions in recent years, including the different pathways to entering K2. Separately, we are about to conclude a four-month project constructing and validating BPS' new Opportunity Index, a tool that quantifies the individual and neighborhood factors that are outside of a school's control that affect academic achievement and can thereby guide funding and programmatic decisions intended to ameliorate pre-existing inequalities between students.

With our years of experience working on increasing equity through school choice with several offices at BPS, we have constructed a five-stage model that outlines the steps of engagement between families and BPS as children are enrolled through the school choice assignment system. At each stage, there are plausible risks for inequities to enter the system and also plausible policy mechanisms to increase equity and access to high quality schools. As part of this model, we have articulated essential questions, identified the necessary data, and, in some places, already started running analyses. Three of the stages in our model parallel the three questions of interest listed in the Invitation for Bid. BARI is uniquely positioned to effectively and efficiently produce the analyses requested in the Invitation to Bid in the tight timeline required because we have been working with BPS on questions around school choice since the implementation of HBAP.

Previous Work: The Five-Stage Model of School Choice and Assignment

The five stages of engagement between families and schools during the school choice and assignment process are: 1) Choice baskets; 2) Shopping period; 3) Submission of choices; 4) Assignment; and 5) Enrollment. We have considered how inequities might arise during each of these stages. We elaborate on this five-stage model here, including the work we have done previously that has prepared us for this project. Importantly, we also note which stages relate to the three main questions posed in the Invitation to Bid: a) equitable access to quality; b) equitable assignment; c) attending schools closer to home while maintaining diversity. Some of the stages *do not* correspond to questions in the Invitation to Bid, but we describe them because they are important to answering a related series of "why" questions we describe below. We believe such analyses will be of interest to BPS as they will help to explain the results of the equity evaluation and provide greater insights into how the system might be made more equitable.

Stage 1. The determination of "choice baskets." This stage aligns with Invitation to Bid question **a) equitable access to quality.**

HBAP creates a "basket" of candidate schools for each family, guaranteeing a *minimum number of schools* at a given tier; for example, all baskets contain the nearest two Tier 1 (i.e., top tier) schools. While equitable in premise, this does not guarantee a *minimum number of seats*, as schools vary in size, nor does it guarantee an *equal number of schools or seats.* As a consequence, students in densely-populated neighborhoods may find they have more "competition" for schools than their counterparts in sparser neighborhoods. Further, some schools offer K1 programs with guaranteed continued enrollment in K2 (i.e., K0-K2 feeder pattern), which may impact the number of K2 seats available for the K2 lottery and thereby increasing competition for particular high-quality schools. Owing to residential segregation, such geographic differences become *de facto* racial and socioeconomic differences. Further, variations in feeder patterns across types of elementary/middle schools to secondary schools can create additional inequities. For example, exam schools that start at grade 7, but most elementary and middle schools end at grade 5 or grade 8.

We have conducted preliminary analyses on the equity implications of feeder patterns across K0-K2 with data from HBAP, adding the data on number of available seats will enable us to sharpen these analyses.

Stage 2. School Shopping Period. This is not currently represented among the questions that are the focus of the RFP, but it is the first stage in which families have agency in ways that might explain "why" and "how" carefully planned and executed policies to increase equity at Stage 1 can devolve into inequities.

At Stage 2, families must evaluate the schools in their baskets. They likely use BPS resources, other public information, and information provided by friends, family, and acquaintances. How families engage and evaluate these informational sources, which vary in their content and quality, has consequences for their ability to match schools to their priorities. Because families' selections ultimately affect the schools to which students are assigned, any systematic differences across ethnic, neighborhood, or socioeconomic groups in the collection and utilization of this information could be critical.

We have made progress in this area which we could build on should there be an opportunity to take the next step following the completion of the work of this bid. In January, 2016, the BARI-BPS team surveyed nearly 1000 parents registering their children for school about their priorities and the informational sources they used to choose schools. Preliminary analyses demonstrate that parents prioritize achievement, safety, staff quality, and location in selecting schools. However, African-Americans prioritize safety, location, and transportation more than Whites do. Notably, parents are more likely to rely on their social networks than on BPS-provided information. African-Americans were less likely to report visiting schools prior to selection (Murray & Hill, 2017).

Stage 3. Choice Submission. This stage is reflected in a subset of the RFP's focus on **(b) All students are equitably assigned to schools, sub-item (ii) Enrollment-overarching analysis of whole group and subgroups on all items**. That said, this is only a glancing reference and a more robust analysis of this stage will be necessary in a "why" effort.

As families are able to select up to 10 schools during registration, an implicit assumption of Choice Policies is that all families want the same thing—high-quality schools, close to home—in which case equal access through choice baskets translates into similar rankings and equitable assignments. But families may vary systematically in the features that make schools attractive to them, potentially creating uneven competition across neighborhoods and types of schools. The district's' emphasis on DESE Tiers may not equally map onto families assessments of quality.

Work in Johnston's (2015) dissertation, done in conjunction with Profs. Hill and O'Brien, analyzed choice behavior under 3Z. It examined equity in the number of schools submitted by families, the proportion of students receiving their first choice, and the extent to which parents balanced high-quality schools with their proximity. Strikingly, he found that families prioritized schools based on their racial and ethnic composition more so than the closest top-tier school. Specifically, families tended to select schools with racial diversity *provided that* their own race was well-represented, a dynamic that can incidentally create racial segregation. They also tended to select schools that reflected the racial composition of their own neighborhood. Last, families in predominantly black neighborhoods were unlikely to select walk-zone schools. These results, which are

represented graphically in Figure 1, call into question the assumption that all families want "good schools close to home."

We will replicate these findings and compare them to similar analyses conducted with the HBAP data to identify changes or improvements in equity in schools that are submitted by families during registration.

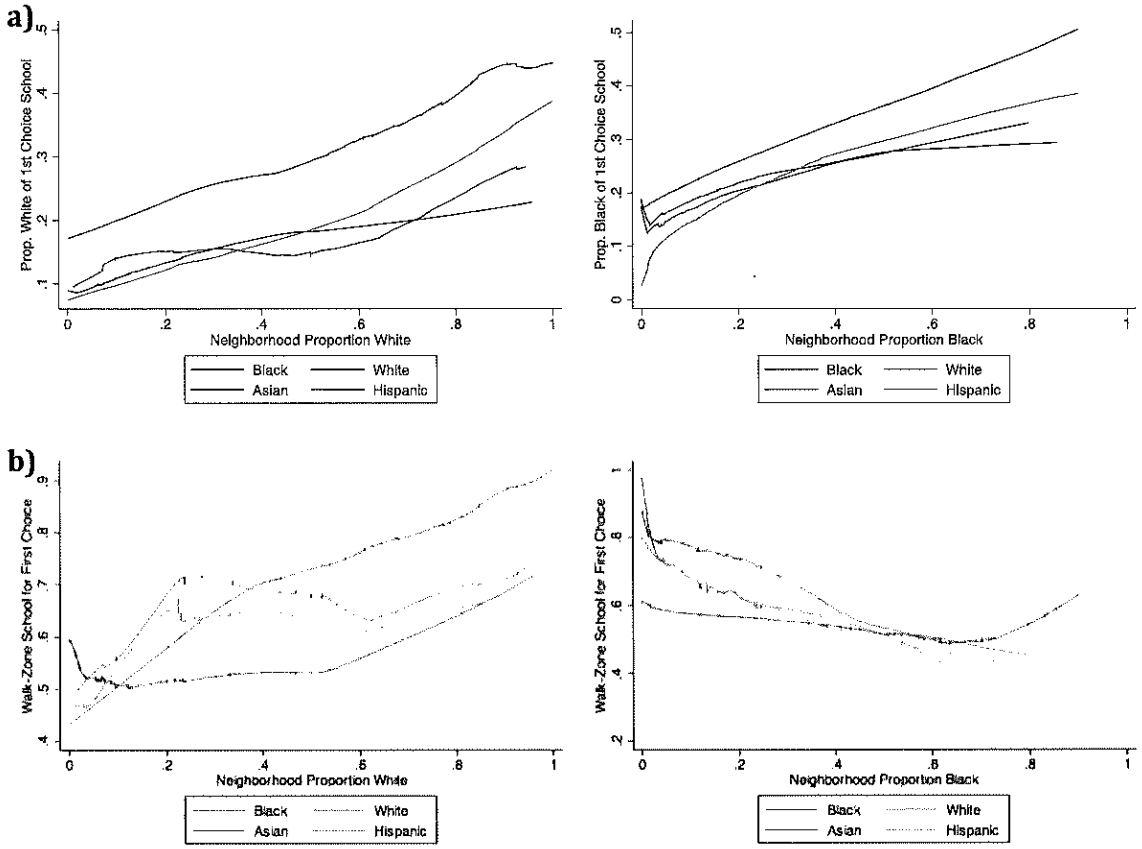

Figure 1. Features of top-choice schools based on family and neighborhood ethnicity. In (a) we see that White and Black families each select schools that have a greater representation of their own race, but particularly if they live in homogeneous neighborhoods. In (b) we see that all families living in predominantly White neighborhoods are more likely to select Walk-Zone schools, but that the opposite is true in predominantly Black neighborhoods.

Stage 4. Students' Assignment to Schools. This stage aligns with Invitation to Bid question b) **equitable assignment to schools.**

The randomized nature of a lottery system of assignment favors the creation of equity, but there are some priorities (e.g., sibling, neighborhood based preferences) that have the potential to undermine equity in the lottery assignment system.

BARI has begun modeling the effects of priorities under 3Z and is developing the data infrastructure that will enable this analysis for HBAP. This can help us to understand to what extent priorities are influencing equitable assignment.

Stage 5. Enrollment. This stage is aligned with the RFP's request for analyses of whether (c) **BPS students attend schools closer to home under the HBAP compared to the prior plan** and the types of analyses that are essential to the (b. ii) **Enrollment-Overarching Analysis of whole group and subgroups on all items.**

The most basic question of the success of HBAP is whether students are attending schools that are high quality and closer to home. Has average distance to schools decreased since the implementation of HBAP, compared to 3Z? Have inequities in the distance between home and the Tier 1 schools in families' baskets been reduced? We have already made progress on these measures in the 3Z data. Initial analyses demonstrated that African Americans had the shortest average distance between their home and the DESE Tier 1 schools in their 3Z baskets, whereas Whites and Hispanics had the farthest distance. These preliminary analyses did not take into account neighborhood density and average distance of all schools, issues that can be examined and parsed as part of this bid for your RFP.

Does school diversity persist under HBAP? Though these outcomes are largely determined by assignment, they can be influenced by family decisions to enroll. The factors that influence such decisions would be able to uncover the effects such decisions have on the composition of schools. This is particularly trenchant given that one of the challenges of school choice and assignment policies is when families with greater access to resources remove their children from the district because they are disinterested in the assignments they receive. As part of this RFP, we will examine transfers within districts and out of the district (e.g., METCO). Such transfers may result in destabilizing fluctuations within schools in ways that create inequities. Regardless of the mechanisms, there is the potential for inequities to emerge.

Summary

As shown here, BARI has already produced the foundational empirical and theoretical work necessary to complete the work requested by the Invitation to Bid. This illustrates our

facility with the data sets that will need to be examined, familiarity with the nature of the questions, and ability to frame and interpret the results.

Analysis Plan

Here we describe a two-part analysis plan. First, we will address the three main questions articulated in the Invitation for Bid:

a) All students have equitable access to choose high quality schools;
b) All students are equitably assigned to schools;
c) BPS students attend a school closer to home under HBAP as compared to the prior assignment plan (while also maintaining diverse school communities).

As requested, we will examine each of these comparing HBAP to 3Z across race, income, neighborhood, LEP status, Special Education status, and transfers. If we align the three main questions onto our five stage model of the school choice and assignment process, (a) maps directly onto Stage 1 (Choice Baskets), (b) maps directly onto Stage 4 (School Assignment), and (c) is an assessment of overall outcomes within the system.

Answers to this set of questions will describe the current state of HBAP and its impacts on the district, but will not explain *why* these results are the case and how they have arisen. For this reason, we describe a second phase of work that would answer these more nuanced questions by "looking under the hood." Importantly, families must make decisions at Stages 2 (School Shopping Period), 3 (Choice Submission), and 5 (Enrollment) that will mediate how Choice Baskets and School Assignment result in overall outcomes. By understanding these we will better understand the overall operation of the policy and how it might be further refined.

The Bid price below is for the first phase only, and we describe the second phase for its informational value and to open up a conversation about further directions.

The work plan will be as follows, broken into its larger pieces:

Phase 1: Invitation for Bid Questions on Equity under HBAP

Pre-processing of data (1.5 weeks)

We will first organize all data received and update all team members on the meaning and interpretation of all variables and their values, and how they map onto the main analyses that are to be conducted. This will include the initial drafting of internal documentation, based in part on previous work already done with BPS' choice and assignment data. An important part of this step will be geocoding all data at the address level to be compatible

with BARI's Geographical Infrastructure[1], which breaks down the region into its discrete components at multiple levels (i.e., addresses, streets, census geographies, etc.). This will enable us to analyze spatial questions (e.g., distance from home to school) as well as compare access and assignment across neighborhoods. We will also need to generate place-to-place distance measures based on the street grid, something that will be possible through a Google Maps API Key, to which one of BARI's affiliated faculty has access.

During this time we will also lay out the code necessary to execute the analysis. This will involve identifying the exact variables to be utilized, the values that reflect particular interpretations of interest, and the ways in which we will segment the data set for cross-group comparisons.

Question a): Access (1.5 weeks)

We will first examine access in terms of district-assigned choice baskets for each family. We will assess not only number of schools in each Tier in a basket, but also the number of seats *and* the number of other students with those seats in their choice basket. This latter measure is the best way to understand true competition in access. We will also examine the nearest school at each Tier in a basket and the average distance to a school at each Tier. This will be done across regions of the city and demographics.

Question b): Assignment (1.5 weeks)

Second, we will analyze the outcomes of actual assignments. This analysis will entail many of the same comparisons conducted for Question b), though for assigned schools rather than schools in the Choice Basket. We will also assess whether inequities increased or decreased between Choice Baskets and Assignments. In doing so, we will specifically examine: number of choices across families and demographic groups, distribution of administrative assignments, and the assignments of transfers relative to the main population. Last, we will examine how the decision to enter the district at K0, K1, or K2 affects the equity of assignments entering elementary school.

Question c): Composition of Schools (4 weeks; concurrent with other work)

This part of the analysis looks at the district after enrollment. A first question here is how far individual students are traveling to arrive at school—an extension of the previous analysis. The questions that follow, however, are more about district-wide patterns and the

[1] https://dataverse.harvard.edu/dataverse/geographical_infrastructure_2017

extent to which schools under HBAP are still acting as an important institution for bringing young Bostonians from different socioeconomic, racial, and geographic backgrounds together.

In order to assess these questions of diversity we will use cutting-edge network analyses as follows. First, we will calculate the number of children from each census tract attending each school for each age group. This can then be translated into a network of the linkage between each census tract's population and schools, and, in turn, the amount of admixing between students from different communities. From this network, we can extract a number of critical pieces of information, including the following: To what extent are students from the same neighborhood attending the same school or small set of schools? To what extent is a particular neighborhood's children isolated from other communities or from communities with different backgrounds? To what extent are these features different between HBAP and 3Z?

Reports, Presentations

We have budgeted an additional ~2 weeks of work to account for synthesis, preparation of reports and talks, and unforeseen delays.

Phase 2: The "Why" of Equity under HBAP

As stated above, we describe here a second phase of analysis that could help to explain the findings of Phase 1. Again, the work necessary to answer these questions is not included in the current bid price, and we include this simply to open up a conversation about possible next steps for this partnership.

From Access to Assignment

As described above, we have already done initial work on the ways that families gather information about schools and how they then apply their preferences to this knowledge to select schools from their choice baskets. In order to understand how equity shifts between access and assignment, we will rigorously examine this process using rank choice logit models. This will replicate the work of Johnston's (2015) dissertation. These will enable us to see, in general, the features that make schools more or less popular, and also to see how these priorities differ across demographic groups or contexts; for example, families in high-crime neighborhoods might select schools far enough away to ensure transportation and mitigate walking in dangerous neighborhoods. This knowledge can further be used to see where consistency in these priorities is intensifying or alleviating competition for seats (for

example, if the families of a particular neighborhood are all prioritizing the same set of school characteristics, they will likely pick many of the same schools in the same order, thereby intensifying competition). We will also spend additional time analyzing the parent surveys to better understand the sources of information being used to make these decisions.

From Assignment to Enrollment

There are some initial descriptive analyses that can be conducted regarding the decisions of assigned students to enroll in BPS. We will compare these across groups, and the extent to which they are altering the composition of schools from that which was expected at the time of assignment. We will also run models to determine which features of a family best predict the decision to enroll or not.

Bid Details

We will complete the work for **$56,277.** This price is based on an anticipated requirement of 800 person-hours of effort over the course of 8 weeks (100 hrs./wk.; $70/hr.), the salaries and hourly wages of the team members, and overhead costs. This estimate accounts for data preparation, analysis, communication between the team and BPS, and the preparation and delivery of presentations and reports.

The team for this project will consist of: Profs. O'Brien and Hill; Mariah Contreras, a postdoctoral researcher at the Eliot Pearson Department of Child Development at Tufts University who has been working with BARI on projects with BPS, including recent analyses of school choice data; Nolan Phillips, a postdoctoral researcher with BARI with particular expertise in network analysis; Samantha Levy, BARI's program coordinator, who will assist with preparation of reports; two graduate students in the School of Public Policy and Urban Affairs at Northeastern University with skills in Urban Informatics; a graduate student in the doctoral program at HGSE. Each team member will dedicate 10-20 hours a week to the project, depending on their role.