Engaging Families in Co-Designing the Algorithmic Student Assignment Policy in San Francisco Unified School District

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Abstract

The San Francisco Unified School District (SFUSD) passed a resolution in 2018 to redesign their algorithm-based decision-making student assignment system to promote predictability, proximity, and diversity. We worked in collaboration with SFUSD and conducted community engagement interviews with families and guardians as stakeholders to realign the goals of this algorithm with the interests of community in mind. We further performed an inductive qualitative analysis of these interviews using the grounded theory approach. Using this analysis, we generated a theory for the new system.

Research Question

How can we engage parents in a process of co-designing school assignment algorithms?

Study Background

- San Francisco has historical patterns of socio-economic and racial segregation and inequity

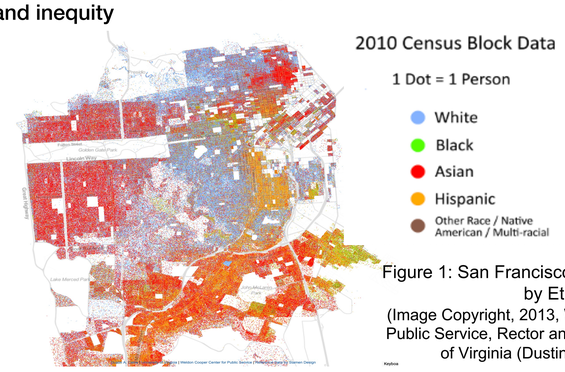

Figure 1: San Francisco residential segregation by Ethnicity
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- Since 2011, SFUSD had turned to an algorithmic student assignment system for students to choose district wide-schools to attain diversity

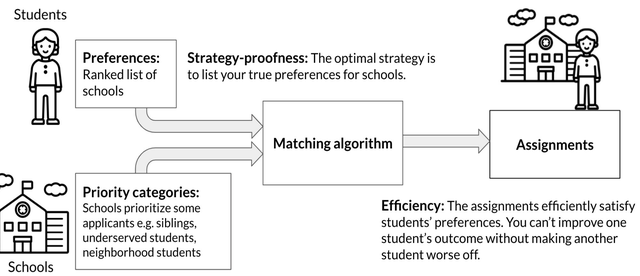

Figure 2: The matching algorithm takes students' preferences over schools and schools' pre-defined priority categories as inputs and outputs the most efficient assignment of students to schools.

- However, this system failed to foster its intended values in practice, and it created frustration amongst families [3]
- This situation arose because the algorithm faced challenges in its practical deployment as there are divergent goals and constraints in a broad spectrum of stakeholders like students, schools, and districts
- In 2018, the school district passed a resolution to initiate a complete redesign of its community-based student assignment system.

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Methods

A. Recruitment Strategy

- Worked in collaboration with SFUSD, education placement center and non- profits to recruit ideal participants for the study.
- Primary form of communication was email

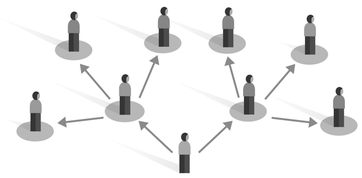

Figure 3: Snowball Sampling

B. Data Collection

- Semi-structured interviews (n=2) over the phone
- Participants: Families of color with a low socio-economic status (identity remains confidential)
- Interviews were recorded and transcribed using text-to-speech service

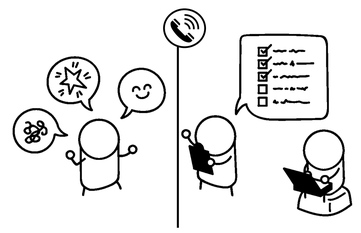

Figure 4: Conducting Interviews

C. Data Analysis

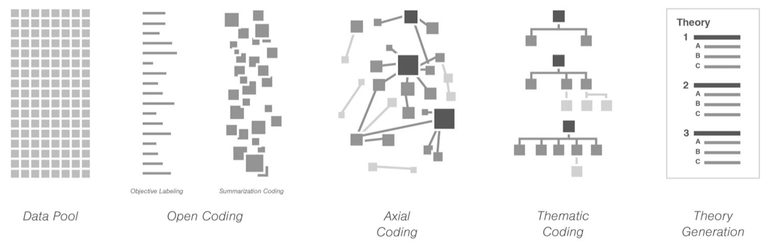

Figure 5: Grounded Theory Coding Phases

- Inductive Qualitative Analysis
- Approach – Ground Theory Method
- Analysis software - maxQDA

Findings

A. Proximity and Transportation

- Parents who don't own a vehicle can't adhere to an assignment made far from where they live

"So the legal guardian reached out to me and said, I need, they have no transportation," (P1)

B. Limitations of the Sibling Tiebreaker

- Sibling tiebreaker assigns the younger sibling to the older sibling's school while the vice versa is not true

my concern was that [if] they didn't end up in the same school they're going to, they're just not going to go to school" (P1)

C. Time and Information Costs for Navigating the System

- Families needed one-on-one support for enrolling their child at a favorable school. They strongly encouraged the fact that having someone who they can talk to at the district can be very resourceful

"my preference would be to be able to meet them and have a one-on-one sort of liaison" (P1)

D. Inequitable Distribution of Resources and Diversity

- Families believe that resources are not distributed equally amongst schools
- Families shared that some schools supported some ethnic backgrounds more than others.

"they need to be in a like Asian or Bessie Carmichael school.... because I don't want them to get like culture shock" (P2)

E. Limited Support for Immigrants and Foster Children

- Foster and newcomer students struggled to find openings in school because they arrived in the country during the academic term or moved across foster homes at inopportune times

"at least giving them a chance or like a slot, like considerations for them [immigrants] to be there." (P1)

Discussion

- Decision-making algorithms when subjected to novel cases tend to make erroneous assignments in high confidence. Personalized information required by the edge cases was provided by the "street-level bureaucrats" [4] of the system. The new design of intelligent decision-making algorithms should establish reflexivity, like the bureaucrats, to examine the repercussion of their decisions before the decision is made.
- Our findings revealed that marginalized parents wanted their children to attend schools with children of similar ethnic background and culture. This finding makes us question whether the community wants diversity as a metric in the schools.

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