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Neighborhood Priority or Desegregation Plans? A Spatial Analysis of Voting on San Francisco's Student Assignment System

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Abstract In 2011, San Francisco held an unprecedented citywide vote on its public schools' student assignment policy. Proposition H provides a unique opportunity to learn more about the public's desire for "neighborhood schools," as compared to their interest in maintaining districtwide desegregation efforts. This paper takes the approach of applying geographic information system tools and regression analysis to understand the relationships between neighborhood, race, income, and attitudes toward student assignment systems. By comparing the election results with demographics and school quality data, we identify patterns of support for the narrowly defeated proposition. Support for a shift toward neighborhood-based schools was higher in census tracts with high-performing schools, more school age children, high median income, or a large fraction of foreign-born residents, and lower in tracts with a high percentage of Latinos. The shifting race- and class-based politics of the city foreshadow expected demographic shifts in the US.

Keywords Educational equity · Segregation · Student assignment policies · School choice

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Introduction

Controversies over student assignment policies have returned to the forefront in educational policy debates across the US. Originally mandated by the federal courts to force intransient districts to desegregate, race-conscious student assignment policies were later voluntarily adopted by many school districts with strong interests in creating diverse student bodies by race and class. Many districts used their student assignment plans to allow children in racially segregated or low-income neighborhoods more access to the top-performing schools in other parts of the district. However, student assignment policies designed to increase access to quality schools and promote diversity in student bodies have been fundamentally challenged in US courts in recent years, and assignment systems have been trending away from desegregation efforts and toward policies that place greater priority on attending neighborhood schools (Delmont 2016). As the courts retreated from the strong enforcement of these plans, levels of racial isolation have increased within school districts across the US (Bifulco et al. 2009; Orfield et al. 2014; Reardon et al. 2012).

The voting public rarely has an opportunity to directly weigh in on specific details about how children should be assigned to schools; usually such matters are determined by school boards, or through court rulings. But in San Francisco, a 2011 ballot measure, Proposition H, asked voters to prioritize neighborhood proximity over other factors in the city school district's desegregation policies. Disaggregated returns from that election provide a unique opportunity to map attitudes toward desegregation policies in the sixth decade after the *Brown* v. *Board of Education* decision mandated equal access to public schools. In this paper, we examine the demographic characteristics of those areas that voted in support of giving neighborhood a higher priority, and the characteristics of those areas that voted to keep the existing system, which maintains a strong focus on integration. Using geographic information systems (GISs) and regression analysis, we identify geographical centers and demographic profiles of support for and opposition to Proposition H. Although the ballot measure was narrowly defeated by less than 1000 votes out of over 180,000 votes cast, its proponents continue to exert political pressure locally, and their sentiments continue to influence the broader policy debate. The results may be helpful in understanding how similar policy initiatives might fare elsewhere, and help us to understand more generally the demographics of support for neighborhood priority and for desegregation plans. Examining voters' attitudes toward racial equity issues is crucial to understanding the political process of educational change. School district leadership, local elected politicians, school board members, and the public are often at odds when it comes to student assignment policies. Our analysis offers an important contribution to untangling those political interests, taking advantage of a rare vote on student assignment systems to catch a glimpse of the political interests that are shaping student assignment policies everywhere.

The Shifting Context of Student Assignment Policies

In the 1970s and 1980s, school districts across the US engaged in battles over how students should be assigned to public schools. Many of these battles resulted in court-ordered plans, using race to assign students to schools in ways that moved districts toward desegregation or "unitary status" (Holley-Walker 2010). Court-ordered desegregation plans were implemented in various ways, most notably through redrawing school attendance boundaries and busing students to schools outside of their segregated neighborhoods. The American public was divided by race in their response to these plans. African Americans were generally supportive, viewing the new policies as an opportunity to access quality schools to which they had long been denied entry. Many Whites, by contrast, felt entitled to send their children to the schools in the neighborhoods in which they lived, favored limiting attendance to local residents, and viewed new student assignment policies as impinging on their rights as property owners (De la Roca et al. 2014; Pattillo 2015; Ryan and Heise 2002). These divisions have persisted in large part due to the continued prevalence of residential segregation by race and class in the US (Clark 1988; Galster 1988; Quillian 2002; Frankenberg 2013; Phillips et al. 2015).

By the 1990s, the court-ordered plans gave way to voluntary desegregation plans, led by school districts and educators concerned with equity and diversity. These so-called "race conscious student assignment policies" were popular in large urban districts. In most cases they were designed primarily to address equity between African American and White students (Orfield 2013; Welner 2006). Many large urban districts allowed parents to choose the school they wanted their children to attend, and then, for oversubscribed schools, used a series of tiebreakers that included a student's race or income level. Some districts set aside places at each school for neighborhood applicants, as long as racial balance could still be achieved (OERI 1992). The response to these policies has been mixed, possibly attenuating, but not eliminating "white flight" from urban schools (Billingham 2015; Clark 1987; Hannon 1984; Morrison 1996).

What was required by the courts a few decades earlier was increasingly challenged in the courts by the late 1990s (Welner 2006). In 1999, San Francisco made national headlines with the *Ho v. SFUSD* case. This class action lawsuit, brought on the behalf of Chinese American students in the San Francisco Unified School District, ended the district's practice of using a student's race in the student assignment process, even when the purpose was to promote racial diversity at each school. Plaintiffs argued that Chinese American students, also from modest backgrounds, were disadvantaged by the race-conscious student assignment policies. The right of all students to access quality schools faded to the background as the parents' rights to choose a school for their children gained legal traction. This shift in orientation culminated in the 2006 case of *Parents Involved in Community Schools* (*PICS*) *v. Seattle School District No. 1*. The *PICS* Supreme Court decision undercut the voluntary desegregation efforts of many schools districts and restricted the use of a student's race in student assignment systems (Coffee and Frankenberg 2009; Diem 2015), challenging the political momentum behind school

desegregation efforts. Although the long-term effects of the PICS decision are yet to be seen, school districts are now limited in their ability to use a student's race in their student assignment systems (McDermott et al. 2012).

Alongside these legal developments, the school choice movement reframed the conversation about student assignment in the US and elsewhere (Billingham 2015; Burgess and Briggs 2010; Ladd et al. 2009). One strand of school choice theory focused on raising academic achievement by implementing market discipline within public education, positioning schools to compete for students. Released from school assignment boundaries, sometimes known as "catchment areas," the theory asserts that all schools would be pushed to perform better as parents played the role of educated consumer, by researching school performance and creating a demand for high-performing schools (Betts 2005; Billingham 2015).[1] In addition to the broad discourse about increasing overall performance through competition, some researchers and activists also put forth the idea that school choice could be an instrument for promoting educational equity. This theory, sometimes described as the "liberation model," hypothesized that choice-based systems would liberate students from being assigned to underperforming neighborhood schools and could therefore diminish the academic performance gap (Archbald 2004; Bifulco et al. 2009; Gaddis and Lauen 2014; Phillips et al. 2015).

Although more media attention has been given to controversial "voucher" proposals that would enable students to pay private school tuition with public taxpayer money, policies to allow greater choice within public school systems have been a much more prevalent form of school choice (Orfield 2013; Reback 2008). These have evolved to include inter- and intra-district "open-enrollment plans" (Abdulkadiroglu and Sönmez 2003; Archbald 2004). In many places, district officials and parents have viewed the open-enrollment plans as compromise policies where schools can work toward desegregation efforts by giving low-income families or families of color priority in the selection process, while still maintaining a modicum of school choice for all families within the district (Croft et al. 2010; Toch and Aldeman 2009).

Even as educators pushed districts to desegregate schools and decouple residence from school assignment, from the early 2000s, there has been growing interest in "neighborhood schools" in low-income as well as middle- and higher-income neighborhoods (Coffee and Frankenberg 2009; Parcel and Taylor 2015). In a shift in the logic of facilitating access to high-performing schools, some educators now suggest that persistent race- and class-based achievement gaps should be addressed in the neighborhoods where they are found, and children should attend high-quality schools in their own neighborhoods, where they can build community, even if that increases segregation by race and class (Dobbie and Freyer 2011; Goldring et al. 2006; Taylor et al. 2013; Walzer 2008).

In fact, the Boston school district recently joined the shift back toward neighborhood schools with a major overhaul of its student assignment plan (Seelye

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[1] The literature on the premise of school choice and its effects on overall academic performance is extensive (see for example Chubb and Moe 1990; Henig 1994; Witte 2001; Schneider et al. 2002; Betts and Loveless 2005; Betts et al. 2006; Hoxby 2007; Loeb et al. 2011; Clark and Maas 2012).

2013). The new Boston student assignment policy, called the "Home-Based Choice Program," uses a mathematical algorithm to offer students a "customized list" of school choices based, in part, on the distance from their home. Unlike other neighborhood-based plans, however, every Boston family is guaranteed to have some high-performing schools on their list (Boston Public Schools 2014). In a departure from past court-approved desegregation efforts, the system does not explicitly consider the racial makeup of schools; the word "desegregation" does not appear at all on the website set up to explain the system to Boston parents. With a savvy balance of concerns about walkability, neighborhood identification, and equity, Boston's "algorithm-based policy" is one of the most complicated attempts to increase equity across race and class while still shifting away from overt race-conscious policies (McDermott et al. 2015; Toch and Aldeman 2009).

Interestingly, recent research shows that choice-based intra-district plans can sometimes increase segregation rather than reduce it. Because educated and affluent families are more likely to participate in open-enrollment programs than the poor, there is some evidence that these intra-district choice plans can lead to schools being more segregated than they would be if the district used only neighborhood to assign students to schools (Bifulco et al. 2009; Kasman 2014; Phillips et al. 2015). With the tool of race-conscious student assignment limited under the *PICS* decision, persistent residential segregation coupled with differential participation in the school choice process is leading to less, not more, race- and class-based diversity in schools (Frey and Wilson 2009; Reardon et al. 2006, 2012).

The San Francisco Example

How does the public feel about the importance of diversity in schools when weighed against the convenience and community advantages of neighborhood schools? Do families still want to work toward desegregation efforts or do they prefer to have children attend schools within their own neighborhoods? Our analysis of attitudes toward Proposition H in San Francisco, a neighborhood schools initiative, sheds light on the answers to these important policy questions.

San Francisco's school district is an important case study for analyzing the American public's changing attitude toward student assignment policies. San Francisco's highly multiracial school district serves a student population that, as of 2011, was 33% Chinese American, 24% Latino, 12% White, 10% African American, and 5% Filipino, with the remaining groups comprising 1% or less, or responding as other/decline to state (San Francisco Public Schools 2012). While this demographic profile is not representative of current student demographics on a nationwide level, it does reflect the national demographic trends that point to growth in immigrant communities across the US. That is, other US cities are moving toward what San Francisco and other West Coast cities look like today (Cohn 2015).

Racial residential segregation in San Francisco is lower than many other large cities in the US (Wright et al. 2013). For example, the 2010 Black–White index of dissimilarity measure for San Francisco is 53, notably lower than Los Angeles at 67, New York City at 81, or Chicago at 83; San Francisco's White–Latino (47) and

White–Asian (40) indices of dissimilarity are also lower than Los Angeles at 66 and 42, New York at 66 and 51, and Chicago at 61 and 41, respectively (Brown University 2010). Similarly, the isolation index, a measure of the likelihood a member of a group will reside around others from the same group, is also lower in San Francisco for all racial groups, except for Asians, when compared to the same set of US cities as above. The relatively large Asian population in San Francisco affects the isolation index measure when compared to other cities. Despite its relative lower levels of overall residential segregation, like many other major urban school districts, San Francisco's schools are actually more segregated now than they were in the 1970s (Knight 2012; Reardon et al. 2012; Van Hook and Snyder 2007). For example, 60% of San Francisco's public schools have simple majorities of one racial group. In almost one-fourth of schools, 60% or more of the students belong to one racial group (Smith 2015).

The SFUSD's student assignment policies have been shaped by the changing legal framework of desegregation in the US. Lawsuits by the NAACP in the 1960s and 1970s led to a court-monitored desegregation program in 1983 which capped enrollment by race at each school (Scott and Quinn 2014). In response to the 1999 *Ho* case, SFUSD created a new student assignment process that excluded explicit quotas by race, but weighted the lotteries for oversubscribed schools with a "diversity index" calculation that gave priority to students whose enrollment would increase the demographic diversity, in several dimensions, of their preferred school. This policy evolved over the following decade. Awarded a federal technical assistance grant in 2010, SFUSD redrew attendance area boundaries around schools, because some schools still had non-contiguous attendance areas dating to the long-discontinued busing programs of the 1980s. The district gave these attendance area boundaries greater weight in a policy redesign that took effect just months before the November 2011 election (Abdulkadiroglu 2013; DeBray et al. 2012; San Francisco Public Schools 2012, pp. 9–10).

The policy redesign was motivated in part by the school board's desire to increase enrollments in public schools: San Francisco historically has one of the highest rates of private school attendance in the nation, more than twice the national average (Lapkoff and Gobalet Demographic Research 2002). Some blamed the complexity and uncertainty of the assignment system for discouraging families from choosing city schools, or even from remaining in the city altogether—San Francisco has the lowest number of children per capita of any large city in the nation (Egan 2005). But even as the new policy went into effect for the 2011–2012 academic year, voters were asked to push the assignment system further toward neighborhood schools.

The SFUSD student assignment system implemented in 2011 is closer than many to the assumptions of the "liberation model" (Archbald 2004; Bifulco et al. 2009; Phillips et al. 2015) in that all students must participate in the school choice process, and oversubscribed schools accept students on the basis of a lottery. Neither race nor income factor into the lottery system directly. Rather, priority within the lottery system is given to a set of tiebreakers depending on the grade level and the type of school or program: the highest priority is generally given to students with siblings attending the school, followed by students who attended a feeder school, students

currently attending underperforming schools (a federal No Child Left Behind requirement), students residing in census tracts with low test scores, students residing within the attendance area, and then all other applicants (San Francisco Public Schools 2011). Families are not guaranteed access to their neighborhood schools, and residence in the neighborhood attendance area is the lowest priority given within the assignment system.

SFUSD makes clear that their goal is not simply to provide "school choice" for parents, but to "reverse the trend of racial isolation and the concentration of underserved students in the same school and to provide equitable access to the range of opportunities offered to students" (San Francisco Public Schools 2013). SFUSD has explicitly outlined a progressive policy to increase equity in the district, but even in a city renowned for its liberal politics, not all city residents supported the district's methods.

In 2011, a group of private citizens launched Proposition H, a proposed citywide measure that would urge the SFUSD School Board to alter its student assignment policy to use neighborhood residence as the *primary* criterion for assigning students to schools (Department of Elections 2011). The proposition was narrowly defeated by less than 1000 votes out of over 180,000 votes cast. Although the school board, SFUSD district officials, and teachers unions were strongly against Proposition H, grassroots organizers were able to generate a significant amount of support for a shift toward neighborhood schools. Despite the fact that Proposition H was a "recommendation measure" and not a binding proposition, it provided an important gauge on the public's attitudes toward neighborhood schools and diversity efforts.

Although the ballot measure was defeated, the issue remains contested in San Francisco. In spring 2015, two school board members sought—again unsuccessfully—to amend the student assignment system to give greater preference to neighborhood applicants (Tucker 2015). Around the same time, the district released a study showing that segregation continued to increase in most of the city's public schools under the current school choice framework, and that segregation would increase further within schools if neighborhood were given even greater priority (San Francisco Public Schools 2015, pp. 16, 34).

The voting patterns for Proposition H provide a unique opportunity to understand how the general public feels about student assignment policies and the balance between achieving "neighborhood schools" and increasing diversity and access to quality schools. Understanding these often-competing goals is central to the larger project of improving the educational outcomes for more students. The narrow defeat of Proposition H is the starting point for this analysis. Which neighborhoods in San Francisco supported Proposition H and which opposed it? How did race and ethnicity play into the results? Are people living in neighborhoods with high-performing schools more likely to support the neighborhood schools initiative in order to guarantee their children access to those schools? What does this suggest for further efforts to promote equity in public schools in this city and beyond?

Data and Methods

In order to investigate the patterns of support for Proposition H, we have merged together data from several sources at different spatial resolutions using a GIS. GIS techniques have been underutilized in school choice research but can be a critical tool for understanding the geographic dimensions of student assignment programs (Lubienski and Dougherty 2009; Sohoni and Saporito 2009). As described below, we used GIS overlay methods to apportion precinct-level election results and school quality data to the census tracts, for comparison with demographic data. Table 1 provides summary statistics for key variables before and after they are aggregated to the census tract level. In this section, we discuss the various data sources, and in the "Findings" section below, we present our analysis of these combined data using maps, correlations, and multivariate analysis.

Table 1 Descriptive statistics of key variables

Variables	Units	Mean	Standard deviation	Minimum	Maximum
% Voting yes on Proposition H	Precincts	49.3	12.2	16.7	73.4
	Tracts[a]	49.8	11.5	25.7	72.0
Elementary Academic Performance Index 2010	Schools	810	85	627	947
	Tracts[a]	810	82	632	944
Middle school Academic Performance Index 2010	Schools	757	97	568	874
	Tracts[a]	770	77	629	882
Percent of households with children less than 6	Tracts	9.76	5.20	1.09	29.76
Percent of households with children 6–17 only	Tracts	10.34	7.01	0.64	29.35
Median age (years)	Tracts	38.91	5.72	20.30	67.90
Percent homeowners	Tracts	41.69	24.95	0	90.09
Percent with education beyond high school	Tracts	65.99	18.18	16.11	94.64
Median family income ($)	Tracts	94,006.58	48,626.54	20,139.00	250,000.00[b]
Percent in poverty in last 12 months	Tracts	12.36	9.19	1.14	52.95
Percent foreign-born	Tracts	34.55	16.13	0	89.75
Percent Asian, non-Hispanic	Tracts	31.11	19.52	3.89	89.81
Percent Black/African American, non-Hispanic	Tracts	6.29	9.46	0.40	61.01
Percent other race, non-Hispanic	Tracts	0.98	1.30	0.12	14.63
Percent two or more races, non-Hispanic	Tracts	3.26	1.01	0.72	6.70
Percent Hispanic/Latino (of any race)	Tracts	14.78	11.86	2.11	60.11

[a] After area-weighted allocation from the original units to census tracts

[b] Maximum reported by US census

Election Data

The San Francisco Department of Elections provided data on the boundaries of voting precincts and the election returns for Proposition H in the November 8, 2011 election. There were 418 precincts used in the November 2011 election, including 163 precincts formed by merging smaller precincts used in the previous elections. Election returns indicated the number of "yes" and "no" votes in each precinct, whether cast by mail or at the polling place. The Department of Elections also provided the total number of registered voters in each precinct, allowing us to calculate the voter turnout rate by precinct for Proposition H as ranging from 2.1 to 82.2%, averaging 42.3%.

For comparison with demographic data, we reapportioned the election results for the 418 precincts into San Francisco's 194 census tracts using a GIS overlay method. We calculated the percentage of the land area of each precinct that overlapped with each census tract, and then assigned a proportional number of votes from each precinct into each tract. This approach, while preferred over unweighted methods and offering greater spatial granularity than aggregating to the smallest common polygon, makes the assumption that voters and their votes on Proposition H are uniformly distributed within precincts (Hess 2007; Openshaw 1984). Any error introduced by this assumption is likely to be smaller than if we had aggregated the demographic data from tracts to precincts, given their relative sizes. Allowing for negligible differences in how precinct and tract boundaries were drawn, a quarter of precincts were completely contained within one census tract; on average, each precinct overlapped with portions of four tracts, and each tract overlapped with

Fig. 1 Proposition H election results by census tract, November 2011

portions of nine precincts. Figure 1 shows how votes on Proposition H were distributed in tracts across the city.

The 2011 election returns do not include demographic data on voters (such data are not collected by the Department of Elections), but an exit poll conducted by San Francisco State University in 2005 did capture the race and ethnicity of a sample of voters from a sample of precincts (Neely et al. 2006). Since both the 2005 and 2011 elections were "off-year" elections, with no major national or statewide contests on the ballot, there would likely be similar levels of voter turnout within demographic groups in 2005 and 2011. In order to compare the demographics of voters and residents, we used the aforementioned GIS overlay method in reverse, along with race and ethnicity data for census tracts from the American community survey (ACS) to estimate the demographic profile of residents in each precinct for comparison with the voters in each precinct (see "Demographic Data" section for further information about the ACS data). Due to consolidations of precincts in the intervening years, only 9 of the 21 precincts sampled in the 2005 exit poll matched the same geographic boundaries in 2011; changed boundaries for the other surveyed precincts may explain some of the differences in the demographics between residents and voters. Nonetheless, the results of the comparison are consistent: We can expect Whites and African Americans to be more represented among voters compared with the residential population of each tract, and Latinos and Asian Americans to be less represented. We take these findings into consideration when interpreting the Proposition H results in terms of the residential population of census tracts.

Demographic Data

We obtained the boundaries of census tracts and detailed demographic data from the ACS conducted by the US Census Bureau. San Francisco, as both a city and county, was divided into 194 tracts for the 2010 decennial census, and the ACS data for 2007–2011 are published for those tracts.

Tract-level census variables considered in this study include age, income, home ownership, education levels, race, or ethnicity, and country of birth. Specifically, for age, we considered the median age in each tract, the percent of households with children younger than 6 years, and the percent of households with children aged 6–17. Income was represented as the median family income within the tract and the percent of households with income below the federal poverty level. Tract-level data on home ownership (as a percentage of households) and education beyond high school (as a percentage of persons) were also included.

Of the racial categories as currently defined by the Census Bureau, Whites, Blacks or African Americans, and Asian Americans are represented in large numbers in San Francisco. Separately, the Census Bureau reports the number of individuals who identify themselves ethnically as Hispanic or Latino. Census nativity data also distinguish between US-born and foreign-born individuals. Because breakdowns of the Latino and Asian populations, and specifically Chinese Americans, are only available at the tract level and not for census block groups (and because reaggregating data between the block groups and voting precincts would

introduce additional error relative to using census tracts), we chose census tracts as our units of analysis.

We should note that the interaction between race, ethnicity, and nativity as reported in the ACS data for San Francisco is problematic. The ACS tabulations of total population counts subdivide all of the racial categories into Hispanic and non-Hispanic populations, but the tabulations of foreign-born and US-born residents only subdivide the White population this way. For most of our regression models, we use the total population counts, which allow us to look at the results for non-Hispanics of each race and for Hispanics of all races. However, in the analysis where we investigate differences based on the proportion of foreign-born and US-born within each race, we are limited by the data and can only separate out Hispanics who are classified as White. The inclusion of the Hispanic category would double-count individuals who identified as both Hispanic and, say, African American, though we expect those numbers to be small in this context (Faught and Hunter 2012). In the analysis which focuses on differences between tracts based on the percent of the population that is US-born versus foreign-born, the non-White Hispanics are excluded to avoid double-counting. Thus, a shortcoming in our analysis by US or foreign-born nativity is that we are only capturing results for Hispanics based on those Hispanics who identified as White in the census.

School Data

We obtained data on public schools in San Francisco from both the school district and the state government. From the California Department of Education's EdData database, we extracted the names, street addresses, identification numbers, and academic performance index (API) scores of all public schools in San Francisco, divided by grades served—generally elementary (K-5), middle (6–8), and high schools (9–12), although some other configurations are present. We geocoded the street addresses to map the point locations of each school.

The API scores for each school and district were published annually in California from 1999 to 2013 under the state's Public Schools Accountability Act of 1999. API scores ranged from 200 to 1000, with 800 representing the state-mandated performance target for all schools and districts. Scores were computed based on standardized tests given annually in grades 2–12 covering state standards in mathematics and language arts, as well as in science for grades 5, 8, and 9–11 and in social studies for grades 8 and 9–11 (CDE 2012). School test scores in San Francisco included some of the highest in the state, with some exceeding 950; the districtwide score of 796 came close to meeting the state-mandated target in 2011, while the following year the district scored 807. The lowest API score in the district in 2011, at 422, was posted not by a school with a student assignment area (AA), but by a center serving newly arrived, non-English-speaking immigrants from across the city (SFUSD 2011, 2012).

The San Francisco Unified School District published new student AAs for elementary and middle schools in 2010. Students living within the AA of a school have some level of priority to attend that school, although as noted above, under the current system other factors are weighted more heavily. Hypothesizing that voters in

the AAs of high-performing schools would be more likely to support Proposition H, we computed area-weighted API scores for each census tract. We extracted the AA boundaries from a publicly available map on the district's website, converted them to a GIS-compatible format, and georeferenced them to the coordinate system used for the census tracts and election precincts. Then, using the GIS overlay method described above, we computed area-weighted elementary and middle school API scores for each census tract: each school's API was weighted by the proportion of the tract that overlapped with that school's AA.

Limitations in Analyzing Aggregated Data

Because the data we use in our analyses are aggregated to the census tract level, all of our conclusions are stated at the tract level as well. We can identify patterns with respect to the demographic characteristics of tracts that voted in favor or against Proposition H, but we do not draw inferences about the voting behavior of individuals within the tract or voting groups within the city. We caution that voting patterns connected to aggregate demographic groups do not necessarily reflect the voting behavior of the individuals in that group. For example, we are able to show the voting pattern for tracts with a high proportion of Latinos, but that does not necessarily mean that pattern is being driven by Latino votes. The pattern could instead be driven by other groups who live in tracts with a high proportion of Latinos.

In other studies that similarly involve data collected at an aggregate level, as in election results from secret ballots or census data aggregated to protect the privacy of individual respondents, various methods have been proposed to infer the characteristics or behaviors of sub-groups within the aggregated data. King's model for ecological inference (1997) has been the most cited in recent years, though multiple alternative methods have also been proposed (see Shively 1969; Freedman et al. 1991; Schuessler 1999; Crawford and Young 2004). However, as Liu (2007, p. 8) notes in comparing King's model with competing methods, "because of the nature of ecological inferences, which in most circumstances does not allow the researchers to know the real quantities of interests, none of the methods may guarantee reliable estimations."

In interpreting the results presented below, we suggest that the use of aggregated data at the census tract level is appropriate for determining which areas of the city are more or less strongly in favor of neighborhood schools. In contrast with other research scenarios where the main question of interest is about how voting behavior varies with individual-level characteristics, in this case, we are interested in how voters' perspectives are likely to be influenced by the characteristics of the neighborhood in which they reside. In the future, further research on spatial aggregation and ecological inference methods could be used to look at the role of individuals' characteristics.

Findings

Correlations and a Basic Regression Model

Our analysis of the data starts with simple correlations with voting results for Proposition H (see Electronic Supplementary Material, Table S-1). The strongest correlation with the percent voting yes is the API for elementary schools in the area, with a correlation coefficient of 0.64. Middle school performance on the API is also associated with a greater percentage of votes in favor of Proposition H, though the magnitude of the correlation is somewhat smaller (0.46). The next strongest correlations are along the racial dimension, where tracts with a high percentage of Asians were more likely to have voted for Proposition H (0.58), and tracts with a high percentage of Latinos were more likely to have voted against the proposition (−0.55). In addition, tracts with higher median age and tracts with a high percentage of foreign-born residents were more likely to vote in favor, with correlation coefficients of 0.36 and 0.30, respectively.

However, raw correlations can be misleading—for example, a tract which happens to be primarily of a certain race might vote for the proposition because the local schools score high on the API, in which case the API score would be the true driver behind the voting patterns rather than race. In an effort to disentangle such patterns, we have used regression analysis to look at the effect of each variable when the other variables are held constant.[2] Some of the patterns seen in the raw correlations hold true in the regression analysis as well, while some do not, and some new variables come forward as being significantly associated with voting patterns, once we have controlled for the role of other variables. When interpreting our regression results, it is important to recall that our voting data have been reported in the aggregate, which allows us to identify the characteristics of census tracts that have voted yes or no, but does not allow us to make inferences about individual behavior.

Before moving to the full multivariate analysis, we start with some simple regressions (Table 2). Probit or logit models would be appropriate if we had individual voting data with a binary-dependent variable, but in this case, the dependent variable is the tract-level percentage of votes in favor of Proposition H, so we use a linear regression model instead. We first gauge which groups of variables are most closely associated with voting results by examining the R^2 values in order to see the proportion of variation in the dependent variable that can be explained by each subset of variables. Column 1 presents results based solely on the

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[2] We performed various tests to check the validity of our regression analysis. White's test confirmed that the error terms are homoscedastic and independent of the regressors, and that the model is correctly specified. Residual plots and a Shapiro–Wilk test confirmed the assumption of normality. Plots of residuals against predicted values showed no evidence of non-linearity. With respect to collinearity, the percent of households with school age children is highly correlated with the percent of households with children below school age, and the race variables are highly correlated with educational attainment. This does not invalidate the regression approach, but it can yield inflated standard errors and cloud the interpretation of the coefficients on those highly collinear variables. We obtained similar results with alternate versions of the main regression analysis that dropped the highly correlated variables, providing confidence that there is no substantial bias to our conclusions due to collinearity.

Table 2 Basic models (dependent variable percent voting yes on Proposition H)

Variables	(1) School quality	(2) Neighborhood characteristics	(3) Race and nativity	(4) Full basic model
Elementary API 2010 (area weighted, hundreds)	0.077*** (0.009)			0.040*** (0.008)
Middle school API 2010 (area weighted, hundreds)	0.030*** (0.009)			0.025*** (0.007)
(Omitted category percent of households without children)				
Percent of households with children less than 6 years old		-1.579*** (0.313)		-0.450* (0.241)
Percent of households with children 6–17 only		1.707*** (0.284)		0.764*** (0.218)
Median age		0.005 (0.009)		-0.008 (0.006)
Median age, squared		0.000 (0.000)		0.000 (0.000)
Percent homeowners		-0.087 (0.062)		-0.003 (0.041)
Percent with education beyond high school		-0.002 (0.077)		-0.063 (0.081)
Median family income ($10,000s)		0.011*** (0.003)		0.006*** (0.002)
Percent in poverty in last 12 months		0.225* (0.123)		0.200** (0.091)
Percent foreign-born			0.064 (0.079)	0.233*** (0.085)
(Omitted category percent White, non-Hispanic)				
Percent Asian, non-Hispanic			0.214*** (0.064)	-0.034 (0.086)
Percent Black/African American, non-Hispanic			-0.130* (0.071)	-0.108 (0.085)
Percent other race, non-Hispanic			0.892* (0.522)	0.100 (0.542)
Percent two or more races, non-Hispanic			-1.361* (0.694)	-1.349* (0.621)
Percent Hispanic/Latino (of any race)			-0.524*** (0.067)	-0.473*** (0.104)
Constant	-0.356*** (0.072)	0.178 (0.223)	0.530*** (0.034)	0.121(0.185)
Observations	194	194	194	194
R^2	0.445	0.319	0.575	0.748

Standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$
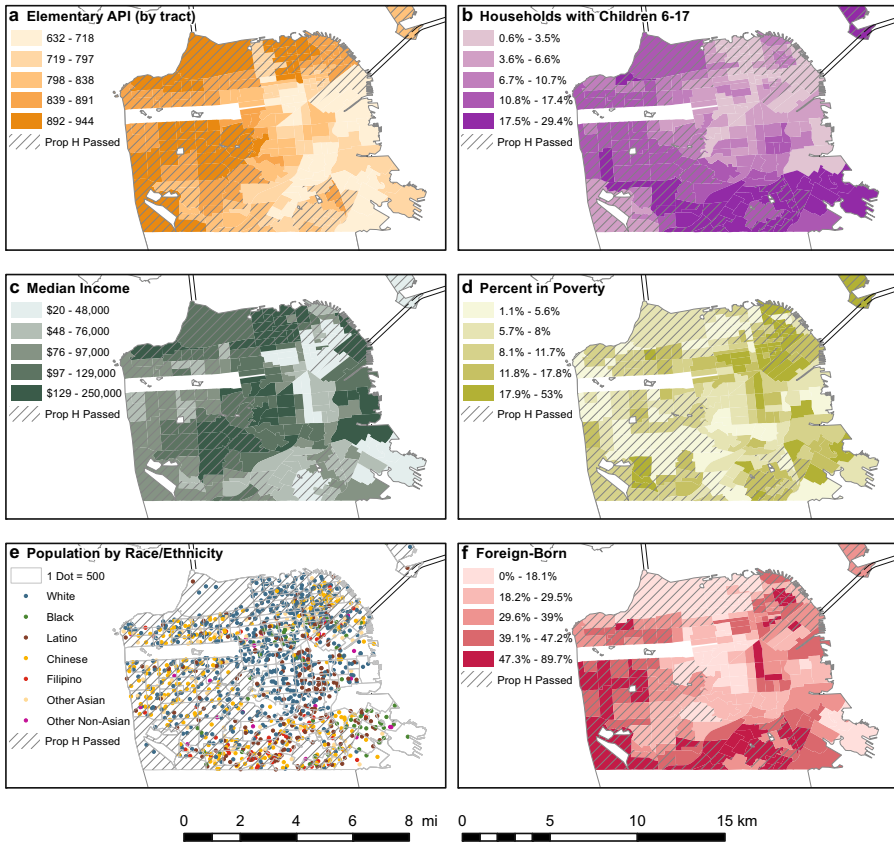
Fig. 2 Geographic distribution of selected variables compared with Proposition H results. **a** Elementary API scores, **b** households with children aged 6–17, **c** median income, **d** percent of households in poverty, **e** population by race/ethnicity, and **f** foreign-born population. (Color figure online)

API; Column 2 is based on neighborhood characteristics such as income and education levels; and Column 3 is based on race and nativity (the percent foreign-born and US-born). The regression based solely on the two API variables shows an R^2 of 0.445, impressively high for just two variables. The regression based on six race categories also shows strong explanatory power, with an R^2 of 0.575, while the regression using neighborhood characteristics has a more modest, but still meaningful, R^2 of 0.319. Column 4 combines all three sets of variables, bringing the R^2 to 0.748, indicating that our full set of independent variables, when taken together, can explain a high proportion of the variation in voting outcomes for Proposition H. Figure 2 illustrates the geographical distribution of some of the key variables (shaded by quintiles) in relation to support for Proposition H.

We provide a full discussion of individual regression coefficients below where we discuss Table 3 models which contain all three sets of variables together (API, neighborhood characteristics, and race). However, before moving to those results, there are a few useful comparisons to note among the columns of Table 2. In the full

Table 3 Extended models (dependent variable percent voting yes on Proposition H)

Variables	(1) Basic model (same as Table 2)	(2) Indicator for Bayview–Hunters Point	(3) With Asian sub-groups	(4) Presenting racial categories by nativity
Elementary API 2010 (area weighted, hundreds)	0.040*** (0.008)	0.040*** (0.008)	0.041*** (0.008)	0.052*** (0.008)
Middle school API 2010 (area weighted, hundreds)	0.025*** (0.007)	0.026*** (0.007)	0.026*** (0.007)	0.028*** (0.008)
(Omitted category: percent of households without children)				
Percent of households with children less than 6 years old	−0.450* (0.241)	−0.449* (0.241)	−0.381 (0.238)	−0.499** (0.245)
Percent of households with children 6–17 only	0.764*** (0.218)	0.771*** (0.219)	0.799*** (0.215)	0.540** (0.217)
Median age	−0.008 (0.006)	−0.008 (0.006)	−0.009 (0.006)	−0.002 (0.006)
Median age, squared	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Percent homeowners	−0.003 (0.041)	−0.004 (0.041)	0.004 (0.040)	−0.016 (0.044)
Percent with education beyond high school	−0.063 (0.081)	−0.064 (0.081)	−0.122 (0.082)	−0.056 (0.077)
Median family income ($10,000s)	0.006*** (0.002)	0.006*** (0.002)	0.005*** (0.002)	0.008*** (0.002)
Percent in poverty in last 12 months	0.200** (0.091)	0.192** (0.092)	0.212** (0.090)	0.142 (0.095)
Percent foreign-born	0.233*** (0.085)	0.224*** (0.086)	0.233*** (0.084)	
(Omitted category percent White, non-Hispanic)				
Percent Asian, non-Hispanic	−0.034 (0.086)	−0.025 (0.087)		
Percent Black/African American, non-Hispanic	−0.108 (0.085)	−0.081 (0.091)	−0.188** (0.088)	
Percent other race, non-Hispanic	0.100 (0.542)	0.109 (0.543)	−0.078 (0.539)	
Percent two or more races, non-Hispanic	−1.349** (0.621)	−1.425** (0.628)	−1.915*** (0.662)	
Percent Hispanic/Latino (of any race)	−0.473*** (0.104)	−0.467*** (0.104)	−0.578*** (0.109)	
Tract is in Bayview–Hunters Point area		−0.018 (0.021)		
Percent Chinese (not Taiwanese), non-Hispanic			−0.155 (0.094)	
Percent Filipino, non-Hispanic			0.122 (0.118)	
Percent other Asian, non-Hispanic			0.117 (0.137)	

Table 3 continued

Variables	(1) Basic model (same as Table 2)	(2) Indicator for Bayview–Hunters Point	(3) With Asian sub-groups	(4) Presenting racial categories by nativity
(Omitted category percent White, non-Hispanic, US-born)				
Percent White, non-Hispanic, foreign-born				0.285* (0.163)
Percent White, Hispanic, US-born				−0.038 (0.191)
Percent White, Hispanic, foreign-born				−0.277* (0.155)
Percent Asian, US-born				0.222* (0.126)
Percent Asian, foreign-born				0.242*** (0.077)
Percent Black/African American, US-born				0.020 (0.084)
Percent Black/African American, foreign-born				−0.065 (0.587)
Percent other race, US-born				0.549** (0.241)
Percent other race, foreign-born				−0.011 (0.245)
Percent two or more races, US-born				−0.207 (0.246)
Percent two or more races, foreign-born				0.861 (0.765)
Constant	0.121 (0.185)	0.132 (0.186)	0.222 (0.186)	−0.262 (0.186)
Observations	194	194	194	194
R^2	0.748	0.749	0.759	0.723

Standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

model presented in Column 4, most of the patterns from the first three columns still hold true: school quality, the percent of households with school age children, and the income-related variables all still have a positive effect, and the percent Hispanic/ Latino still has a strongly negative effect. Yet, a few results do change when the groups of variables are combined in Column 4. The percent Asian is significantly positive in Column 3, but loses its statistical significance in Column 4, suggesting that the association with Asian populations is not robust. In contrast, the percent foreign-born gains significance when the additional variables are added in, suggesting that tracts with a larger foreign-born population are more likely to vote in favor of Proposition H when compared to other tracts with similar levels of income, education, etc. However, the correlation between the percent Asian and the percent foreign-born is quite high, with a correlation coefficient of 0.80, which may cloud the interpretation of the individual coefficients. The relationship between these two variables is explored in our extended regression models.

Extended Regression Models

Table 3 presents a further examination of the effects of the census tracts' characteristics on voting outcomes, with a particular focus on the role of the race and nativity of the tracts' residents. The first column in Table 3 merely re-creates the final column of Table 2—the basic model which includes API scores, neighborhood characteristics, and race and nativity. Columns 2–4 add in additional variables to try to understand the race results better.

In all of these multivariate analyses, the results show that the API scores have an extremely strong tie to voting in favor of Proposition H, with a stronger effect for elementary school scores than for middle school scores. The coefficients indicate that a 100-point increase in the area-weighted API score for elementary schools within the tract would be expected to raise the percent of yes votes by four or five percentage points, and a 100-point increase in middle school API would raise it by roughly 3 percentage points. The geographic distribution of elementary API scores is depicted in Fig. 2a: all of the census tracts with API scores in the top quintile, and most of the tracts in the second quintile, voted for Proposition H. The pattern is nearly identical for middle school API scores.

Another strong and statistically significant predictor of which tracts voted for the measure is the percentage of households with school age children. The coefficients across the models show that yes votes are between 0.5 and 0.8 percentage points higher for each 1 percentage point increase in households with children of ages 6–17. Since the percent of households with school age children has a standard deviation of 7 percentage points, this means that for a one standard deviation increase in the percent of households with school age children, one would expect to see the percent of yes votes increase between 3.5 and 5.6 percentage points. Geographically (see Fig. 2b), the census tracts with the highest proportions of school age children are concentrated in the southern third of the city, but only those tracts in the southwestern neighborhoods strongly supported Proposition H; support was mixed in the south-central neighborhoods and the proposition was opposed in the Bayview–Hunters Point area in the southeast.

While one might expect that parents who are planning to send their children to school soon would also be in favor of Proposition H, the data show that tracts with a high proportion of younger children (less than 5 years old) seem to be less likely to have voted for Proposition H. Perhaps parents with younger children start by voting with more altruistic tendencies, and then their voting behavior shifts as they are confronted more directly with the possibility of sending their children to a more distant, lower-performing school. At any rate, both the magnitude and significance on this finding are weaker than for the percent of school age children.

Several variables which seemed *ex ante* to be likely candidates for influencing voting outcomes for Proposition H turned out not to have an effect. To start, the percent of homeowners in the tract did not seem to matter. The extensive literature on hedonic housing prices has shown that people are willing to pay higher housing prices in areas with high-quality schools (Figlio and Lucas 2000; Kane et al. 2003, 2005). Thus, homeowners might be expected to want to establish permanent connections between their home and the local school, so that the quality of the local school could add to the value of their property. However, this argument will only hold true if in fact homeowners live in areas with better schools, and the cross-correlations indicate that across San Francisco, rates of homeownership are virtually unrelated to API scores. Hence, in the context of a lack of relation between API scores and homeownership in this city, it seems logical that there would be no detectable relationship between homeownership and yes votes on Proposition H.

The education level of census tract residents also does not come in as significant. In models not shown, we tried specifications which separated out education level into finer categories, but none of these sub-categories were statistically significant either. Two possible explanations arise: first, that among college-educated people, the desire to send their children to a good, local school is essentially offset by the desire for a diverse and equitable public school system; or second, that the highly educated do care more about sending their children to good schools, but they have chosen to do so by participating in private schools, and therefore have no strong opinion regarding the public school assignment system. Unfortunately, testing either of these hypotheses is beyond the scope of our data.

Median age, while showing a raw correlation with yes votes of 0.36, does not show up as a statistically significant factor in the multivariate regression analysis. In fact, median age had already lost any statistical significance back in Column 2 of Table 2, once we had controlled for neighborhood variables such as homeownership and the percent of households with children.

Median family income (see Fig. 2c) does have a highly statistically significant effect, such that the percent of yes votes would increase by about a half to one percentage point for each $10,000 increase in median income. This remains true even after controlling for the API scores of the local schools. This means that between two areas with similar API scores, the area with the higher median income level is more likely to have voted in favor of a system that prioritizes proximity. This makes sense because high-income voters are likely to prefer a student assignment system that would allow them the possibility to opt into a good school at

a later date by changing neighborhoods, even if they do not currently live near any high-performing schools.[3]

On the other hand, we also find some evidence that tracts with a higher percentage of households in poverty were also more likely to vote in favor of Proposition H (see Fig. 2d). This is a somewhat puzzling finding, but one might conjecture that this pattern is driven by lower car ownership rates in areas with high poverty. While the current policy does allow parents to indicate preferences for nearby schools, parents without vehicles may feel more secure with a system that is set up to ensure that their child attends a school close to home, since the school bus system for SFUSD is limited, serving only a small proportion of the schools.

As noted earlier, San Francisco has a highly diverse population in racial and ethnic terms (see Fig. 2e), including sizable immigrant communities (see Fig. 2f). With respect to patterns based on ethnicity and nativity, the multivariate regression results mimic some patterns within the raw correlations but not others. The regression analysis does confirm that the higher the proportion of Latinos within the tract, the smaller the percentage of voters voting in favor of the proposition. For a one percentage point increase in the percent Hispanic or Latino, the percent voting for Proposition H goes down by roughly half of a percentage point. Due to the aggregated nature of our data, this finding does not necessarily mean that Latinos themselves were less likely to vote for the measure; it could also be that other groups within highly Latino neighborhoods were driving this result. We also find very strong negative results for the percent of the population identifying with two or more races, but these results are difficult to interpret given the heterogeneity of backgrounds within the group.

The percent of African Americans in the tract is also negatively related to the proportion of yes votes, but the magnitude and significance of this relationship are much weaker than for highly Latino tracts. The fragility of this relationship is surprising given the long history of African Americans' efforts to create more integrated schools. We hypothesized that the weak result here might be due to the fact that one of the largest African American communities in the city (Bayview–Hunters Point) was a center of pro-Proposition H organizing efforts, focusing on the idea that high-quality neighborhood schools should be created in all neighborhoods. Column 2 of Table 3 examines this hypothesis by adding in an indicator variable for tracts located in Bayview–Hunters Point, but the coefficient for Bayview–Hunters Point is not statistically different from zero. It is possible that organizers were just as effective at influencing votes outside of Bayview–Hunters Point as within it.

The raw correlations indicate that the percent of Asians in the tract is highly correlated with votes in favor of Proposition H, but this relationship disappears in the multivariate regressions that control for school quality and neighborhood characteristics. The percent Asian in a tract is positively correlated with the percent of households with school age children, with a correlation coefficient of 0.47, higher

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[3] The correlation between median income and API scores is fairly low: 0.30 for elementary API and 0.13 for middle school API.

than any other racial group.[4] When the specification in Column 3 of Table 2 is re-run, adding in only the percent of households with school age children and no other additional school quality or neighborhood characteristics variables, the coefficient on the percent Asian loses all statistical significance. This suggests that tracts with a high proportion of Asians may be voting for Proposition H because they are tracts with a high proportion of children, and not because of the Asian population per se.[5] We also investigated whether other variables with moderately high correlations with the percent Asian may also be having an influence here; in particular, we also looked at education, the median age, and the percent foreign-born. The evidence seems strongest regarding the correlation with the percent of households with school age children; however, each of these variables may be partly responsible for why the percent Asian does not enter as statistically significant in the full model of the regression analysis. At any rate, once we have controlled for all these variables, the percent Asian no longer appears to be a significant predictor of the voting outcome for the tract.

Because of the historical role of the Chinese American community in contesting school assignment policies in San Francisco, in Column 3 of Table 3 we separate out the percent Asian into the percent Chinese (60% of Asian Americans in San Francisco), the percent Filipino (at 16%, the second-largest single group), and the percent of other Asians. None of the coefficients for these sub-groups are statistically significantly different from zero, so we do not find any differing effects with respect to Asian sub-groups.

The percent foreign-born within a tract does not have a strong raw correlation with the percent voting yes, and yet it appears as statistically significant in the multivariate regression analysis. The results in the first three columns of Table 3 imply that a one percentage point increase in the foreign-born population would lead to an increase in the percent voting for Proposition H of roughly two-tenths of a percentage point. We must emphasize that the voting pattern associated with the presence of foreign-born individuals does not necessarily mean that foreign-born voters are driving that pattern. Because not all foreign-born residents attain citizenship and register to vote, even a tract with a high percentage of foreign-born residents may have more US-born voters than foreign-born voters.

Because the percent foreign-born has a very high correlation with the percent of the tract that is Asian (0.80), we ran an additional model in Column 4, separating out each race into "foreign-born" and "U.S.-born." Here we use "percent white, non-Hispanic, and U.S.-born" as the omitted reference category against which the other groups are compared. (As we noted, the aggregated data do not allow us to simultaneously separate out these nativity categories and Hispanic status, except in the case of Whites, where we are able to distinguish Hispanic Whites from non-Hispanic Whites.) Of the new variables that were added in Column 4, the coefficient

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[4] At the national level, the percent of households with children is slightly lower for Asians than for Blacks and Hispanics, but in our data on San Francisco, the percent of households with children is most highly correlated with the percent Asian (0.47), then percent Hispanic (0.36), then percent African American (0.33). The correlation with percent White is negative (−0.73).

[5] Results of this regression are not shown in this paper, but the same pattern can also be seen in the fourth column of Table 3.

with the highest level of significance is for the percent of the tract comprised of foreign-born Asians. This suggests that the positive effect for tracts with a high percentage of foreign-born individuals seen in the first three columns is being driven in large part by tracts with a high percentage of foreign-born Asians. There are several possible explanations for this that cannot be confirmed with our data sources. Asian immigrants may move to the US in large part for educational opportunities, and therefore place a very high priority on access to educational quality for their children. It is also possible that Asian immigrants are inclined to keep their children in neighborhood schools where the local community is more likely to be familiar with their culture and language. Given that our analysis is at the tract level rather than the individual level, it is also possible that these results are being driven by voters who are not foreign-born Asians, but rather that foreign-born Asians have come to live in communities where voters favor neighborhood school assignment.

Discussion and Conclusion

San Francisco has a particularly racially diverse student population including large and influential immigrant communities. Moreover, San Francisco is known for its liberal social policies and focus on civil rights in particular. Even as these characteristics make San Francisco unusual, the city's experiences foreshadow many of the demographic and political shifts that are affecting public education across the US, notably the increase in Asian and Latino populations and growing contention between federal education mandates and local control (Capps et al. 2005; Orfield et al. 2014). With San Francisco's history of precedent-setting school assignment policies, it is an important city to study in the ongoing battle over the future of voluntary desegregation plans. Indeed, New York and Boston have adopted assignment policies with key similarities, and the Brown Center for Education at the Brookings Institution has recommended these "mandatory choice" models (Croft et al. 2010; Toch and Aldeman 2009). But if popular support for desegregation policies is vulnerable in liberal San Francisco, it is likely to be challenged in other cities as well.

Our analysis of voting outcomes suggests, not surprisingly, that those who stand to gain from a system that ties school assignment to neighborhood generally vote for their interests in this regard. Tracts near schools that perform well on the API, tracts with a high percentage of school age children, and tracts with high median income were all strongly inclined to vote in favor of Proposition H. On the other hand, tracts with a high percentage of Latinos had a much higher percentage of voters voting no on Proposition H, which suggests that voters in these tracts would like to preserve their ability to send their children to schools outside the neighborhood. The percentage of African Americans in the tract also had a negative influence on voting for Proposition H, though the effect was not nearly as strong. The weakness of the result in those tracts with a high percentage of African Americans suggests that Proposition H organizing efforts, which built on the hope of creating strong schools

in every neighborhood, may have been partially successful in these neighborhoods, but we cannot demonstrate this with our data.

While raw correlations indicate that the percent of Asians in the tract is highly related to the percent of yes votes on Proposition H, there is no significant relationship in the multivariate regression analysis between the percent Asian and the percent of yes votes. Since the relationship disappears once other variables have been controlled for, this suggests that it is other characteristics about highly Asian tracts that were driving the raw correlations, and that the raw correlation is spurious.

In the context of the history of desegregation efforts in San Francisco and shifting demographics nationwide, the results of Proposition H illustrate the growing complexity of maintaining a broad base of support for progressive desegregation measures. The policy implications of Proposition H reach far beyond San Francisco. Student assignment policies are usually created by school districts or boards of education, within the constraints imposed by court rulings and legislation, and informed by education theory. When electoral politics is the vehicle through which the public expresses approval or disapproval of these policies, it is crucial for authorities to distinguish between the wishes of the voters writ large and the preferences of the families with children in public schools.

Importantly, the voting population is not the same as the population of families enrolling their children in public schools. Almost half of voters seemed to favor neighborhood schools in Proposition H. In contrast, 74% of the San Francisco families who participated in the 2012 public school assignment process chose a school outside of their neighborhood as their first choice school, and half did not put their neighborhood school in their list of choices at all. Similarly, the district reported that only 57% of new kindergarten families rated "near home" as a very important factor in choosing a school, but a much higher percentage of those families rated other factors as "very important when choosing a school for their children including neighborhood safety (84 percent), teachers and principals (83 percent), school's academic reputation (79 percent), and parent community (66 percent)" (San Francisco Public Schools 2013). These findings suggest that in making their school selections, most families are weighing multiple factors beyond the issues of diversity and neighborhood proximity that drove the student assignment policy and Proposition H. If student assignment policies are decided at the ballot box, the results may not reflect the priorities of public school families.

At the same time, the current school assignment policy's success is called into question by the apparent decline in diversity within San Francisco schools and the persistent gap in academic achievement (San Francisco Public Schools 2015). This is consistent with patterns seen in some other major school districts in the US, where the introduction of intra-district school choice options was followed by increased, rather than decreased, social stratification in schools (see Bifulco et al. 2009; Ladd et al. 2009; Sohoni and Saporito 2009; however, Phillips et al. 2015 also cite counterexamples, and it is difficult to demonstrate causation). Higher-income families do appear to choose schools with higher test scores, showing the behavior expected by market-choice advocates. But some studies indicate that lower income families either give greater weight to proximity or confront other barriers to choosing higher-performing schools. Information barriers are commonly cited as

reasons that underrepresented populations fail to use school choice systems to their advantage: providing clear and succinct information on schools, including academic performance measures, increases the likelihood that participants will choose higher-ranked schools (Allen and Burgess 2013; Croft et al. 2010; Goldring et al. 2006; Hastings and Weinstein 2008). At over 100 pages in each of three languages, SFUSD's annual enrollment guide could present a formidable obstacle to any parent, and does not include academic performance measures. Targeted outreach to families who miss early enrollment deadlines could also improve participation in the system (Betts 2005); toward that end, SFUSD partners with community organizations such as Coleman Advocates to publicize the enrollment process. Even if information barriers can be overcome, though, getting children to quality schools in other neighborhoods may remain a challenge unless the district provides assistance with transportation (Archbald 2004; Hastings and Weinstein 2008).

Although the vote on Proposition H provided a unique opportunity to investigate attitudes toward neighborhood priority and desegregation plans, our results suggest that the ballot box is not the best place to achieve that balance, especially since those who are most in need of access to better-performing schools are less likely to participate, or to be eligible to participate, in elections. School boards may be better positioned than the initiative process for weighing the tradeoffs among student assignment mechanisms, but only if the interests of all students are represented in their deliberations; toward that end, San Francisco voters approved another ballot measure in 2016 that would allow non-citizen parents in the city to vote for the school board (Department of Elections 2016).

As in other districts, San Francisco's student assignment policy attempts to balance a variety of interests and legal mandates. With the erosion of the legal foundations requiring active school desegregation, a continuing conversation within the city, and nationwide, will be required as further demographic changes affect the composition of increasingly diverse urban school districts.

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