White Flight from Asian Immigration: Evidence from California Public Schools

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Abstract

Asians are the fastest-growing immigrant group to the U.S., representing nowadays approximately 6% of the U.S. population. We study how white students respond to the arrival of Asian students in their school district. We develop a simple spatial model of white location decisions to generate empirically testable predictions about whites' response to the arrival of Asian students in their school district. Using California public school districts over the 2001-2016 period as a case study, our empirical analysis, which relies on a shift-share instrument, reveals that the arrival of one Asian student leads to 2.5 white departures in suburban areas. Our heterogeneity analysis suggests that it is richer white students who flee, mainly because of aversion to school competition with stereotypically higher-performing Asian peers.

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1 Introduction

Asian Americans have been the fastest-growing racial/ethnic group in the United States over the past couple of decades: their population increased by 72% (from 11.9 million to 20.4 million) between 2000 and 2015, compared to a 60% increase for Hispanic Americans, the second fastest-growing group (Pew Research Center, 2017, 2019).

At the same time, the high levels of residential segregation in the U.S. has led to persistent racial sorting across its schools[1], neighborhoods, and labor markets.[2] This racial segregation can partly be explained by a phenomenon called "white flight" – i.e., the departure of whites from areas increasingly populated by non-white minorities. A growing body of economic literature has focused on identifying the existence, magnitude, and mechanisms of white flight in response to in-migration of Blacks and Hispanics.[3] However, the white flight response to inflows of Asians[4] has so far been understudied. Yet, there exists anecdotal and sociological evidence that white families' responses to the arrival of Asians may be different from their responses to inflows of Black and Hispanic populations, who are on average lower achieving and lower income.[5]

In particular, the evidence suggests that there is white flight from Asian students in public school districts and that aversion to academic competition with newly arrived, higher-achieving Asian students may play a role. The following newspapers quote illustrates these phenomena: "*many White parents say they're leaving because the schools are too academically driven and too narrowly invested in subjects such as math and science at the expense of liberal arts and extracurriculars like sports and other personal interests [...]. The [...] schools, put another way that parents rarely articulate so bluntly, are too Asian.*" (Wall Street Journal, 2005).

In this paper, we use Californian public school districts over the 2001-2016 period as a case study to explore (i) the extent to which the arrival of Asian students in a school district causes white students to leave the public school system in that district, and (ii)

[1] Today "more than half of the nation's schoolchildren are in racially concentrated districts, where over 75% of students are either white or nonwhite" (New York Times, 2019) despite the fact that racial segregation in U.S. public schools has been illegal since the Supreme Court's 1954 *Brown vs. Board of Education* decision.

[2] For scholarly work on the topic, see for example Cutler, Glaeser, and Vigdor (1999), Card, Mas, and Rothstein (2008) and Zhang (2011) for neighborhoods, Higgs (1977), Carrington and Troske (1998) and Hellerstein, McInerney, and Neumark (2011) for labor markets, and Caetano and Maheshri (2017) and Bischoff and Tach (2020) for schools.

[3] See, for example, Boustan (2010) for white flight from inflows of Blacks and Cascio and Lewis (2012) for white flight from inflows of Hispanics; both papers are briefly discussed later in this section.

[4] In this paper, the term "Asian(s)" refers to all Asian immigrants in the U.S., regardless of their citizenship and generation.

[5] Among individuals aged 25 and older in 2010, 49% of Asians held a Bachelor's degree or more, compared to 18% among Blacks and 13% among Hispanics (Pew Research Center, 2012).

the mechanisms behind any observed white flight. California constitutes a very interesting and relevant case for our purpose because it has the largest Asian American population in the U.S., with more than six million people – that is, slightly more than 15% of the total population of the state (U.S. Census Bureau, 2019). It is in fact the home to one-third of the total Asian population in the U.S. (Pew Research Center, 2017). We focus on its public school districts because, in addition to its publicly available data, there exists substantial variation in Asian population shares across that state (ranging from Asian "ethnoburbs"[6] in the San Francisco Bay and Los Angeles Areas (Li, 2009; Lin and Robinson, 2005) to rural areas with minimal Asian residents), and there is anecdotal evidence of educational competition-driven white flight in its public school system (see Section 2 for more details).

We start with some descriptive analysis. We first document, using the sociology literature, that the ethnic enclaves have been changing over time: Asian families have been moving to suburban areas instead of cities, especially since the mid-1990s. Because additional anecdotal evidence also indicates that white flight happens predominantly in these areas, our main analysis focuses on suburban areas over the 2000-2016 period.

After establishing these facts on the arrival of Asians in California and the responses from whites, we then estimate the correlation between Asian arrivals and white departures using ordinary least-square (OLS) regressions. One concern with that method though is that Asian immigrants may choose to live in areas where white households are already leaving (e.g., because housing prices will be lower in these areas). Alternatively, both white households and new Asian immigrants could be attracted to the same school districts (e.g., because of attractive amenities).

To address the aforementioned concerns, we then try a causal analysis, which relies on a shift-share instrument (a.k.a. Bartik or Card (2001) instrument). Specifically, we use the established patterns of Asian migrations (from China, India, Japan, Korea, the Philippines, and Vietnam) as of 2000 (our base year) to predict the settlements of new inflows from 2001 to 2016 in each Californian school districts. The key assumptions underlying our instrument is that (i) new immigrants are attracted to districts where existing Asian communities already exist, and (ii) the unobserved factors that determine the initial distribution of Asian immigrants across Californian school districts in the base year are uncorrelated with local economic conditions and all other determinants of white location choice in subsequent years. With our instrument, we identify a local average treatment effect (LATE) for first-generation Asian immigrants – i.e., the white flight we find is caused by the arrival of Asians from abroad – so we can view it as a lower bound for the white flight from Asians in general (including second- and later-generation Asians).

[6]This term was first coined by Li (2009) and refers to suburban areas with Asian ethnic communities.

Having established the direction and magnitude of white flight, we present a theoretical model of white spatial location decisions in response to Asian enrollment inflows, in order to help us think about the potential mechanisms behind the flight. We then empirically test these predictions to distinguish between three potential channels: (i) racially-agnostic white departures due to bid-up housing prices that would occur with any migrant inflow to an area, (ii) distaste for Asians, and (iii) preferences for Asians.

Our empirical analysis combines public-school enrollment data for grades K-12 from the California Department of Education (DOE) with various datasets on stocks and flows of Asian populations from the U.S. Census Bureau, the Department of Homeland Security (DHS), the Organization for Economic Cooperation and Development (OECD), and the Current Population Survey (CPS). Our main analysis uses the California DOE data to look at the relationship between the number of Asian students enrolled and the number of white students enrolled in the public schools of a given school district. We then complement this correlational analysis with a shift-share design, which exploits shares and inflows of various groups of Asian immigrants computed from the aforementioned sources of data on population stocks and flows.

Our main empirical finding indicates that there exists white flight in Californian public schools following the arrival of Asian students over the 2001-2016 period, but that, consistent with the sociology literature, it occurs only in suburban areas. In particular, on average, each newly enrolled Asian student causes the departure of approximately 2.5 white students.

As California is known for its rigid supply side of the housing market (Los Angeles Times, 2019), a growing housing demand, stemming from the arrival of new Asian families, is more likely to translate into rising housing prices rather than new constructions. Yet, we separate our sample into districts that are expanding (in terms of their student population sizes) and those that are not. Our analysis provides suggestive evidence that the observed white flight is not due to an increase in housing prices caused by the arrival of new Asian families. Indeed, we find that white flight occurs at approximately the same rate in both school districts that have on average grown over time (in terms of their student population sizes) and those that have on average shrunk over time. Given that there are more white departures than Asian arrivals, this finding suggests that bid-up housing prices is not the main cause behind the observed flight.

Upon further investigations, we find that even though a school district's academic performance improves following the arrival of Asian students, white students still leave the public school system of that district. This finding suggests that whites' aversion to educational competition with their Asian peers is stronger that the preference they may have for higher-performing peers. This hypothesis is further supported by our additional finding that the white flight is observed only in richer school districts, which are presumably populated by wealthier families who can afford to place their children in a private school or completely move out to another school district if they wanted to avoid Asian students. By contrast, in poorer areas, we find that white students seem to be attracted to Asian students, presumably because they do not have the financial resources to flee and so they would rather stay with Asian students rather than Hispanic or Black students, who are on average lower performing.

Our study makes three main contributions to the literature. First, we add to the economic literature on white flight from non-white minorities, by studying flight from Asians, a racial group that has so far either been ignored or been treated as a homogeneous group alongside Blacks and Hispanics, despite their heterogeneous economic and educational outcomes. Second, our paper contributes to the general body of academic work on Asian immigration in the U.S., of which very little dedicated economic knowledge exists. Studying the dynamics between Asians and whites in the U.S., especially in the context of Asians' unique immigration history and trajectory of income and education growth, is imperative to understand a growing and increasingly significant – both in numbers and in economic, social, and cultural impact – subset of the American population. Most of the current literature has studied the reasons why Asians have higher incomes and educational achievement in the modern period (Chiswick, 1983; Hirschman and Wong, 1986; Suzuki, 1989; Sue and Okazaki, 1990; Suzuki, 2002; Lee and Zhou, 2015; Hilger, 2017). Third, this paper also adds to knowledge of the Card (2001) shift-share instrument. Though widely used to predict aggregate new immigrant inflows to the U.S. from past immigrant settlement, often from 1970 or earlier, we find that new Asian settlement cannot be predicted from initial settlements even as late as 1990 in California. This result suggests that the underlying logic that later cohorts are drawn to settle in existing immigrant enclaves may often fail for Asians if initial base years are too early – and that existing papers which construct the shift-share instrument for aggregate U.S. immigration likely fail to get any "bite" from migrants from Asian countries.

Our work relates to several past studies on white/native flight from minority entrants (Card, 2001; Boustan, 2010) and on the tipping points at which majority-white neighborhoods "tip" beyond a certain tolerated minority share to become majority-minority (Card, Mas, and Rothstein, 2008; Zheng, 2013; Blair, 2016). Our paper is most closely related to the former strand of the literature and innovates by studying flight from Asians, as opposed to flight from immigrants as a whole (Card, 2001; Betts and Fairlie, 2003; Crowder and South, 2008; Zhang, 2009; Crowder, Hall, and Tolnay, 2011; Sá, 2015; Farre, Ortega, and

Tanaka, 2018), Hispanics (Cascio and Lewis, 2012), or Blacks (Boustan, 2010; Shertzer and Walsh, 2019). The estimates of white/native flight from the most closely related studies ranging from 1.4 to 2.7.

The remainder of the paper is organized as follows. Section 2 provides descriptive facts about historical trends in Asian immigration in the United States. Section 3 lays out our empirical strategy and the data we use to perform our analysis. Section 4 presents our main result on white flight. Section 5 introduces a theoretical model to help us think about the potential mechanisms behind the observed white flight. Section 6 empirically tests the predictions of our model and discusses the results. Section 7 provides concluding remarks.

2 Trends in Asian Immigration in the U.S.

Large-scale Asian immigration to the United States is still a fairly nascent phenomenon, having only begun to reach substantive levels within the last century. While the first waves of Asian immigrants were low-income and low-educated, the recent waves came from more diverse socio-economic backgrounds (see Appendix Section B for more detail about the history of Asian migration waves to the U.S.).

The patterns of Asian immigrant settlement have changed over time (Li, Skop, and Yu, 2007). From the 1980s to the early 1990s, Asian migrants used to settle in central city enclaves, such as "Chinatown," "Little Tokyo," or "Manilatown." From the mid-1990s onwards though, these traditional enclaves no longer absorb the majority of Asian newcomers. Perhaps surprisingly, Asian Americans, unlike other racial minority groups, exhibit an intriguing pattern of rapid rate of suburbanization in the United States. Many Asian immigrants no longer consider the often run-down and crowded neighborhoods in central cities as their ideal places to live. Instead, Asian newcomers, especially those who belong to the middle and upper classes, tend to avoid central city enclaves because they can afford to settle directly in suburbs, which typically offer better living conditions and public amenities, decent housing, and high-performing schools.

This change in Asian immigrant settlement patterns is particularly true in California, where one-third of the total Asian population in the U.S. live today. Using Asian student enrollment in Californian public schools as a proxy for Asian settlement in California, Appendix Figure A.1 shows that California has a much higher share of Asians than the rest of the U.S.. However, both in California and the U.S., the Asian enrollment has grown in suburban areas. Focusing on California, Figure 1 shows that the share of Asian students in suburban areas has been steadily growing over time, from approximately 6.5% to almost 14% between 1981 and 2017. By contrast, the share of Asian students in rural areas remained low (below 3%) whereas the share of Asian students in urban areas increased starting in the 1980s, then stagnated before steadily falling from the mid-1990s onwards.

In some school districts, the enrollment of Asian students has grown rapidly over time, oftentimes exceeding that of white students, as displayed in Figure A.2. That figure also shows that the enrollment of Asian students was the fastest among all, and the enrollment of white students declined or stagnated from the 2000s onwards.

If we zoom out and look at student enrollment by a school district's area type (see Appendix Section E for details on how we define these areas), we see that Asian enrollment has increased only in suburban areas and remained pretty stable in rural and urban areas (see Figure 2). Another remarkable point from this figure is the rapid increase of Hispanic students, which clearly exceeds that of Asian students.

One may then wonder how white families would react to the arrival of minority students in their school district. On the one hand, white flight could occur "mechanically," simply because of market forces in the housing market – i.e., the arrival of new families leads to an increase in the demand for housing, which in turn raises housing prices because the housing supply is inelastic at least in the short run and may make housing less affordable to poorer white families. On the other hand, the literature on white flight from Black and Hispanic neighborhoods suggests that beyond just pure racial animus, whites associate inflows of these minorities with lower income and lower quality of public education; thus white families move away to higher-achieving, higher-income neighborhoods. However, if so, given that Asian American educational attainment and median income are significantly higher than the overall U.S. population's,[7] would not there be white *attraction* to Asian neighborhoods? The answer seems to be that too much of a good thing is no longer a good thing.

According to news articles that document white flight in schools across the country from California to New Jersey, flight may be driven by *too much* academic achievement. For example, as early as 2005, a *Wall Street Journal* column attributed the rapid drop in white enrollments (by almost half over the 1995-2005 period) in Cupertino and San Jose, California to the rise of the high-tech industry in Silicon Valley, which transformed previously more rural, whiter communities into suburbs teeming with Chinese and South Asian immigrant engineers and their families (Wall Street Journal, 2005). That column also documents that "*Top schools in nearby, whiter Palo Alto, which also have very high test scores, also feature heavy course loads, long hours of homework and overly stressed students*

[7]In 2015 slightly more than half of Asian Americans aged 25 or older have at least a Bachelor's degree, compared to roughly a third of the U.S. population; and, Asian American median household income was approximately $73,000 in 2015, compared to $53,6000 for the overall U.S. population (Pew Research Center, 2019).

[...]. But whites don't seem to be avoiding those institutions, or making the same negative generalizations [...], suggesting that it's not academic competition that makes white parents uncomfortable but academic competition with Asian-Americans." In the same vein, a recent *Los Angeles Times* column reports about Irvine, California: "*For white residents of Irvine, the boom has brought much to like – rising home values, stellar test scores and an explosion of ethnic restaurants, cultural celebrations and retail spaces that have brought international sophistication to a place once known as cookie-cutter suburbia.*" (Los Angeles Times, 2017). Similar reports from Rockville, Maryland (Wall Street Journal, 2005), Tenafly, New York (Wall Street Journal, 2005), Johns Creek, Georgia (Pacific Standard, 2017),[8] and Princeton, New Jersey (New York Times, 2015) echo these sentiments and show that white flight from academically high-achieving Asian "ethnoburbs" is not limited to California.

Online reviews of high schools on Yelp confirms non-Asian parents' aversion to sending their kids to schools with a high share of Asian students because of the stereotype that they are excessively competitive and single-minded. For instance, a review about a high school in San Jose, California reads: "*White kids with good grades get looked at like they have "passing" grades, while Asian kids with "passing" grades seem to be looked at as invalids. The school was 75% Asian in 2005 so... you can draw your own conclusions as to how this will factor into your or your child's experience here.*" (Yelp, 2011) Another review about a high school in Saratoga, California reports: "*The pressure seemed to make [Saratoga High School] one of the top schools in the state but now it's just about band kids and generic asians. Everyone has a 4.0, and anything below is considered a failure. The tradition the school once had has been lost. [...] The school completely lacks spirit, homecoming week used to be the biggest week of the year and the entire school would show up to decorate, now people stay home to study for SATs or just don't care at all.*" (Yelp, 2008).

Thus far, we have presented qualitative and anecdotal evidence that white flight exists in multiple Asian ethnoburbs and seems to be primarily driven by academic competition from rising Asian enrollment. We later on lay out a spatial model to rationalize this phenomenon (see Section 5) and investigate the mechanisms underlying our main finding (see Section 6). Before doing so, we first turn to our empirical analysis to study the existence and magnitude of flight from Asian students.

[8]The column from the *Pacific Standard* reports concerns of a parent who lives in Johns Creek, Georgia: "*Nora's good at math. There are too many kids here good at math. They're affecting her self-esteem. Asian parents take their kids for extra tutoring. It's not fair for the "regular" kids. The high school is too competitive. My kids won't get into a good college because of all of the Asians. I want my children to grow up in the real world. This is not the real world.*" (Pacific Standard, 2017).

3 Shift-Share Approach to Identify the Causal Effect of Asian Student Arrivals on White Student Departures

3.1 Identification Strategy

To examine the migration response of white students to the arrival of Asian students, we begin by estimating a linear relationship between the number of Asian public school students ($Asian_{d,t}$) and the number of white public school students ($White_{d,t}$) in school district d and year t:

$$White_{d,t} = \alpha_0 + \alpha_1 \cdot Asian_{d,t} + \alpha_2 \cdot Total_{d,t-1} + \pi_t + \delta_d + \epsilon_{d,t} \tag{1}$$

We control for initial trends by including year and district fixed effects (π_t and δ_d, respectively). We also control for a school district's total enrollment in the previous year ($Total_{d,t-1}$), as growing regions will likely attract large flows of both white and Asian migrants.[9] We explain in Appendix Section C why we choose to estimate the relationship in levels rather than between first differences, as is more common in the immigration displacement literature.

This ordinary least-square (OLS) specification only provides an associative relationship between white and Asian enrollment; it does not claim the causality needed to establish directional white flight from Asian arrivals. For instance, if Asians prefer to locate in districts with low white populations, then any negative association found would not be driven by white flight but instead by Asian demand, generating reverse causality. In addition, Asian families might sort into ethnic enclaves because of, say, the network they have there, which may make it easier to get job opportunities. By not accounting for sorting patterns and potential reverse causality, our estimate of white flight may be biased.

We attempt to establish causality in the direction of white flight in response to Asian arrivals by employing an instrumental-variable (IV) strategy, which uses a shift-share instrument. The logic behind our instrument, first introduced by Card (2001) and now classic in the immigration literature, is to instrument for the endogenous settlements with the supply-push component of migrant flows, which is arguably exogenous to the demand-pull component. The exogeneity argument follows from the assumption that new immigrants are drawn to settle in enclaves established by earlier immigrants from the same

[9] We include lagged total enrollment rather than total enrollment in the same year, as doing the latter will lead to an estimate of a mechanical effect of Asian arrivals on white population rather than true displacement (i.e., given a fixed total number of students in a school district, an increase in the size of one group must lead to a decrease in the size of another).

source countries. This settlement pattern occurs due to information networks between immigrants and their source countries, which aid the job search and assimilation processes (Munshi, 2003). Picking an early enough year to base the predicted flows off of ensures that the instrument estimates the number of immigrants who would have settled in a district based on historical settlement, absent any current local demand forces.

To our knowledge, our paper is the first to construct and assess the validity of the predicted flows instrument using only Asian countries of origin over this time period. The existing literature finds the predicted flows instrument to be strongly relevant to actual flows, mostly in predicting long-term (decade-long or greater) changes in immigrant populations in the latter half of the 20th century. Previous papers primarily either look at aggregate flows from all Census countries of origin or at Hispanic population flows from Mexico into the U.S. (see, for example, Card (2001); Saiz (2007); Boustan (2010); Cortes (2008); Peri and Sparber (2009); Lewis (2011); Cascio and Lewis (2012); Ottaviano, Peri, and Wright (2013); Foged and Peri (2016)).[10]

To construct our shift-share instrument, we first compute the predicted inflow of Asian schoolchildren into school district d in year t, $\Delta \widehat{AsianEnr}_{d,t}$ as follows. Let $Share_{j,d,\tau}$ be the initial base-year (τ)[11] share of residents in ethnic group $j \in \{$Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese$\}$ in school district d, and let $Flow_{j,t}$ denote the national inflow of ethnic group j in year t. $AsianEnr_{d,\tau}$ is the enrollment of Asian students in school district d in base year τ, and $AsianPop_{d,\tau}$ is the total population of Asian residents in school district d in base year τ. The predicted inflow of Asian schoolchildren into district d in year t, using initial base year τ, is computed as follows:

$$\Delta \widehat{AsianEnr}_{d,t} = \frac{AsianEnr_{d,\tau}}{AsianPop_{d,\tau}} \left[\sum_{j} (Share_{j,d,\tau} \times Flow_{j,t}) \right] \tag{2}$$

We generate a predicted enrollment inflow for each district by first computing the initial Asian ethnic group population as a share of the total national Asian ethnic group population in the base year. We then multiply this share by the national inflow in year t for each ethnic group, and aggregate these district-level inflows across Asian ethnic groups, resulting in a predicted Asian ethnic group inflow for the district in a given year. In order to scale this inflow down to the subset of public-school students, we multiply this sum by the fraction of total Asian public school enrollment over total Asian population for the district

[10]This shift-share instrument is widely used not just in the literature on immigration impacts on native outcomes, but also in studying innovation, education, crime, and productivity.

[11]We try 1990 and 2000 as base years because according to the sociology literature, these follow the start of the third wave of Asian immigration to the U.S. in the mid-1980s (Paik, Kula, Saito, Rahman, and Witenstein, 2014). We show in Section 4 that 2000 is the most relevant base year.

in the base year.[12]

We finally arrive at the instrument, the predicted level enrollment of Asian schoolchildren in district d in year t ($\widehat{AsianPred}_{d,t}$), by advancing the initial base-year enrollment ($AsianEnr_{d,\tau}$) forward by these predicted inflows:[13]

$$\widehat{AsianPred}_{d,t} = AsianEnr_{d,\tau} + \sum_{i=\tau+1}^{t} \Delta\widehat{AsianEnr}_{d,i} \tag{3}$$

We can now take our instrument to estimate a two-stage least-square (2SLS) regression. The first stage (equation (4) below) regresses the actual Asian enrollment in district d in year t on the shift-share predicted Asian enrollment instrument. The second stage (equation (5) below) regresses white enrollment on the predicted values from this first stage. As before, we include $Total_{d,t-1}$, lagged total enrollment in district d, and year and district fixed effects:

$$Asian_{d,t} = \beta_0 + \beta_1 \cdot \widehat{AsianPred}_{d,t} + \beta_2 \cdot Total_{d,t-1} + \kappa_t + \mu_d + \eta_{d,t} \tag{4}$$

$$White_{d,t} = \gamma_0 + \gamma_1 \cdot \widehat{Asian}_{d,t} + \gamma_2 \cdot Total_{d,t-1} + \theta_t + \phi_d + \varepsilon_{d,t} \tag{5}$$

For our empirical strategy to be valid, it must be that the only channel through which the distribution of Asian immigrants in the base year and national annual inflows of Asian immigrants affect white public school enrollment is in their effects on the actual distribution of Asian public schoolchildren across school districts. Satisfying this requirement would guarantee that our instrument is valid for causal identification – i.e., that it is relevant and exogenous. The relevance condition requires that new Asian immigrants do actually settle where their historical brethren settled. That is, predicted Asian schoolchildren enrollment is strongly and positively correlated with actual Asian schoolchildren enrollment in each school district. The exogeneity assumption[14] requires that the national flow of Asian immigrants in a given year is exogenous to differential shocks to school districts. In other words, it requires that the unobserved factors that determined the initial

[12]If enrollment data by Asian ethnic group were available, it would be preferable to perform this scaling from total population to students at the ethnic group level, as different ethnic groups may have different age compositions and educational attainments.

[13]This procedure is complicated slightly in cases where spatial and enrollment district boundaries do not align (e.g., elementary districts that feed to neighboring secondary or unified districts for secondary grade levels). We discuss the construction process for these cases in more detail in Appendix Section D. As school boundary data is not available for us to map tract/county populations to, we are only able to construct this predicted flows instrument and use an IV identification strategy at the school-district level.

[14]We are assuming the exogeneity of the *shares* (as in Goldsmith-Pinkham, Sorkin, and Swift (2020)), rather than the exogeneity of the *shifts* (as in Adao, Kolesár, and Morales (2019)).

distribution of Asian immigrants among California school districts in the base year are uncorrelated with local economic conditions and all other determinants of white location choice in subsequent years.

Note that the shares we use to construct our predicted shift-share IV are assumed to be constant over time. This assumption may not be reasonable if some school districts were on a growing or shrinking path so that there is serial correlation over time and/or spatial correlation. We account for this potential arbitrary dependence by using spatial heteroskedastic and autocorrelation consistent (a.k.a. spatial HAC or Conley) standard errors (Rafael, Sakalli, and Thoenig, 2020).

Note also that with our predicted shift-share IV, any flight or attraction we find would be due to the arrival of first-generation Asian migrants, as opposed to Asian families relocating from, say, urban areas to suburban areas. In that sense, we identify a local average treatment effect (LATE), off the inflows of new migrants coming directly from Asian countries. Since our IV does not account for the effect of the arrival of Asian families that move from urban/rural areas or other states to Californian suburban areas, any effect we find can be viewed as a lower bound.

3.2 Data

We use two types of data in our analysis – namely, education data and population data.

The education data come from the California Department of Education (DOE). The dataset contains annual school-level enrollment data for every public school in each academic year over the 1981-2017 period. It reports enrollment counts by gender and by ethnic group[15] for each grade level (K-12). Although the dataset includes other types of districts (i.e., state special schools, statewide benefit charter school), we restrict the sample to unified, elementary, and secondary school districts. The state is fully divisible into these three types of districts. The majority of California school districts are unified districts (i.e., encompassing grades K-12), but some areas are only covered by elementary school districts (encompassing grades K-8). Students in these elementary districts later attend high school in a neighboring unified or secondary school district. In general, most urban/metropolitan areas are served by unified school districts, while the elementary/secondary district split is more common in rural areas of California. Appendix Figure G.2 visually delineates the boundaries of California school districts. We also combine the California DOE enrollment data with IPUMS data on metropolitan areas to construct variables that determine if a

[15] Ethnic designations are coded as: American Indian or Alaska Native; Asian; Pacific Islander; Filipino; Hispanic or Latino; African American, not Hispanic; White, not Hispanic.

school district is in a rural, suburban or urban area (see Appendix Section E for more detail on the construction of those variables).

We use the 2017 TIGER/Line GIS files from the U.S. Census Bureau to get school district boundaries. We assume that these boundaries have not changed significantly since 1990.[16] We then map the tract/county boundaries to the school district boundaries by tabulating the spatial intersections between tracts/counties and districts in ArcGIS into smaller "fragments" which can be uniquely identified. We assume an even distribution of headcount over geographic area to calculate the settlement of Asians in each school fragment.[17] By summing up Asian populations from the unique fragments within each district boundary, we arrive at a remapping of tract/county populations into district populations.[18]

The population data is required to construct our shift-share IV, as it uses tract- and county-level population counts and national new immigrant inflows to assign predicted flows of Asian immigrants according to established settlement patterns in California.

For the shift component, we use national immigration data from the annual Department of Homeland Security (DHS) Yearbook of Immigration Statistics, which reports national yearly inflows of immigrants by country of origin. Figure 3 plot the yearly inflows of the Asian ethnic groups we consider in our analysis. We see that Indian, Chinese, and Filipino migrants constitutes the majority of the inflows, followed by Vietnamese migrants. Note that "inflows" could correspond to either new arrivals of migrants only or new arrivals of migrants plus adjustments of status for migrants who are already present in the U.S.. For our main analysis, we use the former, i.e., the definition that includes only new arrivals of Asian migrants. As the data only report inflows up to 2016, our analysis sample excludes the 2017 enrollment data. As robustness checks, we alternatively use (i) the OECD definition, which includes both new arrivals of migrants and adjustments of status (Appendix Figure A.3), and (ii) the CPS data (Appendix Figure A.4) to compute an estimate of the yearly inflows of Asian migrants.[19]

For the share component, we use the same yearbook data to obtain national population levels of Asians by country of origin in our candidate base years, 1990 and 2000. For

[16]Source: California Department of Education.

[17]For instance, if 1/3 of the area of a tract lies geographically in fragment A and the other 2/3 lies in fragment B, we assign 1/3 of the tract population to A and 2/3 to B.

[18]The mapping between our shift-share instrument and our enrollment data is complicated by the fact that there is no standardized common identifier for school districts between the Census data and the California DOE data. In order to match school-district data, we string match districts on name and county and utilize the fuzzy string matching packages in Python (e.g., `fuzzywuzzy`). We are able to match approximately 70% of the districts in the DOE enrollment data to ones in the Census data. A robustness check ensures that the unmatched districts do not differ significantly from the matched ones, so the sample should be unbiased.

[19]See Online Appendix section.

school-district Asian populations, we use decennial Census tract-level data on population by racial category. Tracts, which generally encompass areas of between 2,500 to 8,000 people, are necessary instead of more granular units such as Public Use Microdata Areas (PUMAs) because the tract race variable breaks down "Asian" as a broad racial category into Japanese, Chinese, Filipino, Korean, Asian Indian, and Vietnamese. This allows us to map national flows/stocks from these respective countries of origin to the tract-level stocks.[20] California is fully tracted in every census year from 1990 onwards.

Figure 4 displays the shares of Indian and Chinese people nationwide who live in a given Californian public school district (see Appendix Figure A.5 for the maps for Filipino and Vietnamese people). We observe substantial variation, with higher shares in the San Francisco Bay area (Appendix Figure A.6) and the Los Angeles area (Appendix Figure A.7). In Appendix Figure A.8, we also see that in Californian suburban areas a given Asian ethnic group does not necessarily live in the same school district as another Asian ethnic group.

4 Main Result: White Flight from Asian Students in Suburban Areas

We start our analysis by estimating our structural ("OLS"), first-stage and second-stage ("2SLS") specifications (i.e., equations (1), (4) and (5), respectively) using our full sample. Appendix Table A.1 reports the results. Although the OLS coefficient suggests there is some flight, it is small in magnitude (column (1)). Moreover, one cannot infer much from the 2SLS estimate – the first stage is very weak (F-stat of less than three) and the second stage yields a negative coefficient that is marginally significant. These results should not be surprising given that we observe most of the Asian inflows in suburban areas (Figures 1 and 2). We confirm these patterns by subdividing our full sample into rural, suburban, and urban areas[21].

Table 1 presents the regression output from estimating equations (1), (4) and (5), separately for rural/suburban/urban areas. As displayed in columns (2) and (8), the first-stage estimates in rural and urban areas, respectively, are in the "wrong direction," because for our instrument to be valid, we require that our predicted shift-share instrument would be positively correlated with the actual number of enrolled Asian students. We confirm these patterns by plotting in Appendix Figure A.9 the predicted Asian enrollment against actual

[20] We map the following countries of migrant origin to the Census and California DOE ethnic categories: Bangladesh, India, Pakistan → Asian Indian; China, Taiwan, Hong Kong → Chinese; Japan → Japanese; Korea, Democratic People's Republic of Korea → Korean; Vietnam → Vietnamese; Philippines → Filipino.

[21] We detail in Appendix Section E how we construct the variable to define these areas.

Asian enrollment for each area, which shows a positive relationship only in suburban areas. Again, these results are expected since we do not observe inflows of Asian students in these areas. Therefore, in our remaining analyses, we will focus solely on our suburban-area subsample. In column (5), we find a positive first-stage estimate in suburban areas, which supports the validity of our shift-share instrument. Our IV estimate in column (6) indicates that there is white flight from public schools – the enrollment of one new Asian student causes approximately 2.5 white students to leave.[22]

We also perform the same analyses as in Appendix Table A.1 and Table 1 but using 1990 instead of 2000 as the base year for our shift-share instrument; the results are reported in Appendix Tables A.2 and A.3. Here as well, our instrument is not valid in this specification as the first-stage estimate is not statistically different from zero (column (2) in Appendix Table A.2) and the F-stat is close to zero (column (3) in Appendix Table A.2). Turning to our analysis by subsample (Appendix Table A.3), here again, the first-stage estimate has the expected sign only in the suburban subsample. However, even though the IV estimate is statistically significant and negative, the F-statistic is lower than the rule-of-thumb of 10, which does not allow us to infer anything from the second stage.

The contradictory results from the 1990 instrument most likely reflect that the areas in which Asians settled in the 1990s were fundamentally different from those they settled in a decade later – likely another result of a general trend toward suburbs rather than urban areas. The implication for our analysis from these results is that only the 2000 instrument has sufficient relevance for our identification strategy to hold. The results from the 1990 instruments suggest that 21st-century Asian settlement in California followed an entirely different trajectory from earlier settlement.

One plausible explanation for this result is the rise of the "dot-com bubble," a period of rapid adoption of Internet usage and thus extreme growth and speculation in Internet-based companies from around 1995 to 2000. California's Silicon Valley was considered the epicenter of the dot-com boom. By 2000, demand for skilled technical professions was so high that the high-tech industry lobbied for greater visa quotas (often for high-skilled Asian workers) to fill open positions. During the NASDAQ stock market dot-com crash, which lasted from March 2000 to October 2002, more people moved out of the Silicon Valley area than into it for the first time since the start of the bubble (Lowenstein, 2004). The dramatic change in settlement patterns resulting from the dot-com boom may explain

[22]In Table A.4, we show the first-stage, second-stage, and reduced-form results when using a specific Asian ethnic group to construct our shift-share IV. This analysis is consistent with the view that there is heterogeneity among Asian ethnic groups. We can confirm that the flight seems to come from the groups with the largest number of migrants – namely, Indian, Chinese, and Vietnamese. For the other groups, the first-stage F is too low to credibly conclude anything.

the failure of earlier base years to predict 21st-century settlement, especially given that Asians made up such a large demographic share of the dot-com industry workers (Nakaso, 2012).

A resulting concern from this explanation is that the distribution of Asian settlement across districts in 2000 may not be plausibly exogenous to economic and educational demand-pull factors in subsequent years. For instance, if Asians moving away from the dot-com bubble in 2000 decided to settle in up-and-coming areas that continued to grow and appear economically attractive to subsequent cohorts of Asian immigrants, the initial 2000 settlement would be correlated with demand-pull factors in later years. The yearly national inflows may also face exogeneity concerns. Qualitative evidence suggests that residence in certain highly competitive California school districts was so coveted overseas that real estate agents posted listings on Taiwanese and mainland Chinese news sites to attract Asian parents thinking of moving to the United States (Lung-Amam, 2017). While perhaps less likely that overseas attraction to these particular districts influenced the total national flow of Asian immigrants to a significant enough magnitude to be concerning, the possibility exists. These concerns are not empirically testable, but represent possible threats to exogeneity that we refer back to in our discussion of results in Section 6.

The broader implication of this exercise is that the key assumption of the Card (2001) instrument, that new immigrants tend to settle in existing communities, and thus that an initial distribution of the immigrant population predicts new immigrant settlement patterns, may not hold across time, and/or may not hold for specific subgroups. The papers discussed in Section 1 as examples of this predicted-flow identification strategy primarily use base years of 1970 and 1980, but our results show that even the 1990 base year distribution of Asians failed to predict later Asian settlement. Papers that construct this instrument for immigrants in aggregate may see strong overall first stage results, but likely get no "bite" from Asian immigrants, who make up a substantial share of national inflows. This result may caution future researchers to decompose immigrant flows by country of origin and ensure that the past settlement logic is valid for all immigrant groups.

In our case, we think of 2000 as a new starting point in time for the formation of ethnic enclaves that differed substantially from any earlier ones. The formation of these ethnoburbs is also backed up by the literature in sociology (Li, 2005; Lin and Robinson, 2005; Li, 2009; Pew Research Center, 2012; Kye, 2018; Warikoo, 2020). In the remainder of this paper, we will therefore only use 2000 as the base year for our shift-share instrument.

We next present a theoretical model of whites' location decisions to help us think about the potential mechanisms that can explain the observed white flight in suburban areas over the 2001-2016 period. This model provides empirically testable predictions.

5 Spatial Model to Explain White Flight

In this section, we present a theoretical model of white spatial location decisions in response to an Asian inflow, in order to generate testable empirical predictions (which we summarize in Appendix Section F). The following simple theoretical model is adjusted from similar exercises by Boustan (2010) and Cascio and Lewis (2012).

5.1 Setup, Assumptions, and Equilibrium

We focus on the choice of a school district to reside in within a region. The utility associated with a school district for a white household is the following:

$$U(p, k, z; \xi) \quad = \quad \bar{u} \tag{6}$$

where p denotes the price of housing, k denotes the share of Asian enrollment in the school district, z denotes peer quality, and ξ is a school-district quality shifter[23]. Let total district enrollment be $L = W + A + O$, where W, A, and O are the school district's enrollments of white, Asian, and other ethnic groups, respectively. U is decreasing in housing price p. The price of housing is a function of the number of households in the district, which can be proxied by total district enrollment L, and is determined specifically by the price elasticity of housing supply ϵ (i.e., $p = f(L, \epsilon)$).

We model z as a function of $k \equiv A/L$; that is, we assume that the "level" of peer quality depends on a school district's share of Asian enrollment. We further assume that U is weakly decreasing in housing prices (i.e., $\partial U/\partial p \leq 0$) because, under the assumption that housing supply is quite inelastic, the arrival of new families in a given area leads to an increasing of housing prices. However, the marginal effect of an increase in the share of Asian enrollment on whites' utility (i.e., $\partial U/\partial k$) is ambiguous, as it depends on whether whites exhibit preferences or distaste for Asians. Similarly, the marginal effect of an increase in peer quality on whites' utility (i.e., $\partial U/\partial z$) is ambiguous, because parents typically like high-quality peers if they improve their own kid's performance but they dislike them if they perceive that there will be competition or grading on a curve. As documented by Bleemer (2021), this concern appears to be particularly relevant in the context of California where being at the top of one's high-school class guaranteed admission into one of the Universities of California, thanks to their "top-percent policy" (namely, the "Eligibility in the Local Context"), which was in place between 2001 and 2011.

[23] This shifter helps us think about endogeneity: if ξ increases, then families are attracted to the school district.

In equilibrium, no household can increase its utility by moving to another district; that is, $\bar{u} = u$ for the next highest utility u that the marginal household would experience if it chose to move to a different school district in its choice set. The model implies that a district with high peer quality (which increases household utility) must also have a compensating characteristic, such as higher housing costs (which decreases household utility). Note that the same basic model in (6) drives Asian residential choices. We address this identification problem with the instrumental-variable approach described below in subsection 3.1. Given this decomposition of Asian settlement into exogenous and endogenous demand, in spatial equilibrium, all white households prefer their district of residence to all others in their pool of choice (within a given geographic region). In each district, there exist an equilibrium housing price p^*, equilibrium Asian share of enrollment k^*, and equilibrium level of peer quality z^*.

5.2 Predictions

Now suppose that a school district receives an inflow of Asian students and that housing supply is not perfectly elastic. What does this model imply for the number of whites that will leave (or enter) the district? We can distinguish between three potential channels.

Channel 1: Housing prices

Let us first consider the case where whites' utility neither directly responds to Asian enrollment ($\partial U/\partial k = 0$), nor indirectly responds via peer quality ($(\partial U/\partial z)(\partial z/\partial k) = 0$, either because whites' utility is indifferent to peer quality, or because Asian enrollment does not affect peer quality, or both). In that case, since housing supply is not perfectly elastic, the population growth from the inflow lowers white demand by raising housing costs ($\partial p/\partial L > 0$). The spatial equilibrium is restored to p^* (assumed to be a function of total district population) following an Asian inflow if there is exactly a one-to-one departure of white students in response to Asian students' arrival ($(\partial U/\partial p)(\partial p/\partial L) < 0$).

Thus, if whites' district demand is only affected by the population inflow through the housing price channel, then the model predicts one white departure when one new resident arrives, regardless of the race of that new resident.

Channel 2: Distaste for Asians

Let us now consider the case where whites exhibit direct animus towards Asian students ($\partial U/\partial k < 0$) but are unaffected by peer quality ($\partial U/\partial z = 0$). Then, whites' demand (and thus enrollment) will decrease even further, and we expect more than one white departure for every Asian arrival in this situation, as compared to the first.

Now, let us add the assumption that whites' utility is increasing in peer quality ($\partial U/\partial z > 0$). If Asians do not affect peer quality ($\partial z/\partial k = 0$), then the prediction is unchanged from the prior one (as $(\partial U/\partial z)(\partial z/\partial k) = 0$). If Asians decrease peer quality (i.e., if $\partial z/\partial k < 0$, such that $(\partial U/\partial z)(\partial z/\partial k) < 0$), then even more whites would depart in response to an Asian inflow. However, if Asians improve peer quality (i.e., if $(\partial z/\partial k) > 0$, such that $(\partial U/\partial z)(\partial z/\partial k) > 0$), then whites' demand may actually *increase*, depending on how much whites care about peer quality and how much peer quality changes in response to Asian enrollment.

Finally, let us instead consider the case where whites' utility is decreasing in peer quality ($\partial U/\partial z < 0$) – e.g., because of academic pressure and worries about grading on a curve (Cullen, Long, and Reback, 2013; Bui, Craig, and Imberman, 2014; Antecol, Eren, and Ozbeklik, 2016; Warikoo, 2020; Bleemer, 2021)[24]. Here as well, if Asians do not affect peer quality ($\partial z/\partial k = 0$), then the prediction is unchanged. But, if Asians decrease peer quality (i.e., if $\partial z/\partial k < 0$, such that $(\partial U/\partial z)(\partial z/\partial k) > 0$), then whites would be attracted to Asian students. Finally, if Asians improve peer quality (i.e., if $(\partial z/\partial k) > 0$, such that $(\partial U/\partial z)(\partial z/\partial k) < 0$), then whites would strictly strictly prefer to leave the school district, even at $p = p^*$. To restore the equilibrium, there needs to be more than one white departure for every Asian arrival.

Channel 3: Preferences for Asians

Let us now consider the case where whites exhibit racial preferences for / attraction to Asian students ($\partial U/\partial k > 0$). Here, even if whites' utility is unaffected by peer quality ($\partial z/\partial k = 0$), whites would still be attracted to Asian students.

It should also be clear that there would be a more than one-to-one attraction if Asian students improve peer quality and whites prefer higher-achieving peers ($(\partial U/\partial z)(\partial z/\partial k) > 0$). However, if Asian students decrease peer quality ($\partial z/\partial k < 0$), then the effect is ambiguous and ultimately depends on the relative strength of the preferences for Asians vs. better-quality peers.

Now, if instead whites' utility is decreasing in peer quality ($\partial U/\partial z < 0$), then whites would be strongly attracted to Asian students if they are lower-achieving peers. However, if they are higher-achieving peers ($\partial z/\partial k > 0$), then the effect is again ambiguous.

Hence, white outflows can be attenuated, and we can even observe white inflows to a

[24] Cullen, Long, and Reback (2013) show that parents avoid districts where their kids would not be at the top of the class; Bui, Craig, and Imberman (2014) find that higher-quality peers can actually hurt in disadvantaged schools; Antecol, Eren, and Ozbeklik (2016) show that high-achieving peers do not gain anything from being in classrooms with other high-achieving peers.

school district, depending on which case we are dealing with.

While most literature assumes that inflows of other non-white minorities negatively impact school quality amenities, evidence that Asian Americans attain higher levels of education and at higher rates than whites in the United States (Pew Research Center, 2019) supports the assumption that Asians may raise the quality of public education, given that students experience academic peer effects (Hoxby, 2000; Sacerdote, 2001; Abdulkadiroglu, Pathak, Schellenberg, and Walters, 2019).[25] This potentially countervailing response means that even the direction of white migration in response to an Asian inflow is uncertain. In this theoretical setup, we tentatively assume that Asians improve the quality of public schools through positive peer effects ($\partial z/\partial k > 0$); we empirically test this assumption later in Section 6.

While the economic literature suggests that household utility is increasing in school/peer quality (Black, 1999; Deming, Hastings, Kane, and Staiger, 2014; Abdulkadiroglu, Pathak, Schellenberg, and Walters, 2019), the qualitative evidence we present in Section 2 indicate that some white parents dislike the new educational achievement and competition that Asian students bring into the classroom. We reconcile this response by arguing that this observed preference is not a preference against higher public school quality, but just one potential component of distaste for Asian students. The relationship $\partial U/\partial k < 0$ thus encompasses a distaste for Asian-specific educational values, cultural practices, or simply racial prejudice.

Our model is unique in the literature in that it incorporates the opposing forces of whites' negative preference for Asian diversity and positive preference for academic quality, and that even the direction of white flight is ambiguous without empirical evidence of each force's effect on whites' utility. Note that we model the decision to migrate as a household decision, but we measure the departure of individuals. We also study the entrances and exits of students, not residents. Nevertheless, these predictions serve as a useful starting point for how to think about the potential mechanisms behind the white flight we found in the previous section.

[25] Claiming that all Asians are more highly educated obscures well-documented heterogeneity between East and South Asian immigrants (e.g., Chinese, Japanese, Korean, Asian Indian, Singaporean) and Southeast Asian immigrants (e.g., Filipino, Vietnamese, Laotian) (Pew Research Center, 2019). However, as our enrollment dataset's definition of Asian primarily encompasses the former group, we assume that $\partial z/\partial k > 0$ holds true for our sample of interest.

6 Mechanisms: Who Flee and Why?

In this section, we seek to (i) empirically test the mechanisms laid out in our theoretical model, and (ii) understand who are the white students that flee the public school district following the arrival of Asian students. We first rule out the housing price channel as being the sole mechanism behind the observed white flight. We then focus on whether there is distaste or preference for Asians. We will see that there is variation by school districts' socio-economic status (SES).

First, we test whether the housing price channel is the main mechanism at play, by considering the housing-supply condition. If the housing supply is inelastic, then we should observe a one-to-one departure. However, if it is quite elastic (i.e., new housing would be built upon the arrival of new families in a given area), then we should find a departure rate that is less than one-to-one. In Section 4, we found a more than one-to-one departure in suburban areas (see Table 1), which suggests that bid-up housing prices are not the main mechanism behind the observed flight.

As California's housing supply is quite rigid and we observe variation in housing-market responses in California (Los Angeles Times, 2019), we break our sample by districts that are initially growing vs. those that are shrinking (in terms of their student population sizes)[26] to more confidently rule out the housing price channel as the main mechanism. The idea behind this approach is that with a rigid supply side of the housing market, the arrival of new Asian families should translate into higher housing prices rather than new housing constructions.

Table 2 displays the OLS and IV results for the full sample (columns (1) and (4)) and for districts that are on average growing (columns (2) and (5)) and those that are on average shrinking (columns (3) and (6)) in the pre-2000 period. While the OLS results indicate there is a less than one-to-one departure, the IV results suggest that the main result of white flight (i.e., that approximately 2.5 white students leave upon the arrival of one Asian student) holds not only in school districts that were on average initially growing but also in those that were on average initially shrinking (columns (5) and (6)). Even though we are using an imperfect measure of housing supply, since we do not find differential effects by housing-market conditions, we do not expect to find any housing price effects that would be consistent with the observed white flight.

One might nonetheless worry that we cannot fully rule out the housing price effects because it could be that white students stayed in the same school districts but went from

[26]Growing (shrinking) districts are those with a non-negative (negative) average annual growth rate over the 1981-2000 period.

public schools to private ones. In that case, we would observe a growth in population in the area, which should bid up housing prices at least in the short run. We address this concern by splitting the sample into districts with no private schools vs. districts with at least one private school. Table 3 displays the results: even in school districts in which there are private schools, there is white flight, albeit of a smaller magnitude (-2.15). By contrast, in school districts where there are no private schools, we cannot infer much as the first-stage F-statistic is very low (i.e., less than two). Moreover, notice that we anyways find a departure rate that is more than one-to-one. This finding comforts us in ruling out the hypothesis that big-up housing prices is the main mechanism at play.

We are thus left with the hypothesis that whites exhibit distaste or preferences for Asian students. Recall that our theoretical model predicts that there can be a more than one-to-one departure rate only in two cases: either (i) whites exhibit distaste for Asians but like having higher-achieving peers and Asians are higher achieving, or (ii) whites exhibit preferences for Asians but dislike having higher-achieving peers and Asians are such peers. In both scenarios, it needs to be the case that Asians are higher-achieving (i.e., "better-quality") peers. We already mentioned in previous sections anecdotal evidence pointing towards that direction, but we will also provide suggestive evidence.

Our approach here consists in examining the (arguably causal) relationship between a school district's share of Asian enrollment and that school district's academic performance index, which serves as a proxy for peer quality. We perform our OLS and IV analyses on subsamples based on school districts' SES index[27] tercile, because families may have differential preferences for peer quality depending on their own socio-economic status (e.g., higher-income, more-educated families may value more higher-quality peers). We find a meaningful effect only for the subsample of the top third 2000 SES index (Table 4). Specifically, increasing the share of Asian students by 1% leads to a 154-point increase in the API score, which corresponds to a 18% increase from a base API score of 837 (column (6)). For the subsample of the middle third 2000 SES index, the effect is also positive and in fact larger in magnitude, but it is statistically insignificant (column (7)). For the bottom-third subsample, the first-stage F-statistic is too small to be able to infer anything. Taken together, these results suggest that Asian students are indeed higher-achieving peers, at least in wealthier suburban areas.

The differential effects across school districts' SES terciles are not surprising if we look

[27]That index is constructed as the average of two standardized variables (i.e., each demeaned and divided by its standard deviation), both measured in 2000: the percent of students eligible to free or reduced-price meals (FRPM) in the school district and peer quality as proxied by the Academic Performance Index (API). Before taking the average across the two variables of interest, we first made sure that a higher value means higher SES areas.

at the distribution of students by racial/ethnic group. Figure 5 plots that distribution over time by decile. We see that Asian and white enrollments are pretty low in the bottom tercile, and that Asian enrollment increases over time in the top tercile, becoming a larger share of the study body. Interestingly, we also note that below the median, Black and Hispanic students represent the large majority of students.

Having established that Asian students do increase peer quality, at least in higher-income areas, we now look at whether and the extent to which white students flee these areas. If so, it would suggest that whites are actually fleeing Asians because they are higher achieving (and so they want to avoid competing with them), rather than because of pure racial prejudice. Table 5 shows that white students are leaving richer school districts whereas they seem attracted to Asian students in poorer school districts. The effect is particularly strong in middle-SES school districts, which should not be surprising as Asian residential growth is predominantly located in middle-class neighborhoods (Kye, 2018).

There is a priori no reasons to think that whites have on average very different racial preferences for Asians. It turns out that if anything, more-educated and thus on average richer white Americans are more likely to report that Asians are fairly/strongly/absolutely American (i.e., they fairly/strongly/absolutely identify Asian Americans with America and all things American) compared to lower-educated white Americans (see Figure 6). We would therefore expect lower-educated and thus poorer white families (rather than higher-educated, richer ones) to avoid Asian students. Since we found the opposite, it suggests that the observed white flight in wealthier school districts is driven by aversion to school competition with Asians, rather than racial distaste; and that aversion outweighs any peer-quality improvement (stemming from Asian students) that white families may value. The sociological work by Warikoo (2020) in fact shows that more affluent white, U.S.-born parents tend to either lobby the school district to reduce academic pressure and stress, or leave the public school system in favor of the private one.

Note that the flight is of similar magnitude when we split the sample between grades K-8 (-2.3) and grades 9-12 (-2.56), suggesting that aversion to educational competition with Asian students already exist in early grades (Table 6). This finding is consistent with the sociological literature, which documents that middle-class parents of elementary school children attempt to balance their concerns about academic progress and those about their children's emotional well-being. In particular, white families may worry that Asians' intensive and demanding parenting style may negatively impact their children's emotional well-being (Warikoo, 2020). This finding is also in line with the sociological work of Bischoff and Tach (2020), which reports changes in the patterns of racial imbalance between public elementary schools and their surrounding neighborhoods over the 2000-2010 period.

One might be puzzled that white students are attracted to Asians in poorer school districts (column (8) of Table 5). Since we did not have enough power to identify a causal relationship between Asian enrollment and peer quality, we will instead think of different scenarios under which whites would be attracted to Asian students. According to our model, if poorer white families actually exhibit racial animus towards Asians, they may still be attracted to Asian students if they think these students are good peers, and that preference for higher-achieving peers outweighs the racial distaste they have for Asians. However, if poorer white families exhibit preference for Asians, then we would observe attraction to Asians, unless poorer Asian students are not higher achieving and poorer white families would much prefer leave and seek better-quality peers.[28]

Another equally realistic hypothesis, which our model does not capture though, would be that poorer white families do not necessarily have the financial resources to flee Asian students, even if they would prefer to avoid them. It may indeed be too costly for them to place their children in a private school or move to a different school district, just to avoid Asian students. Hence, the tradeoff for these poorer white families is that they need to choose among Asians, Blacks, and Hispanics. Since the large majority of students in those poorer school districts are Hispanic and Black (as shown in Figure 5), and that these students tend to be lower achieving, poorer white families may just prefer to enroll their children with Asian students, especially if they are not numerous. By contrast, middle- and upper-class white families can respond to racial neighborhood and school changes by relocating (Kruse, 2013; Kye, 2018).

7 Concluding Remarks

Over the past couple of decades, Californian suburban areas have experienced a rapid and regular increase in both the number and the share of Asian students who are enrolled in its public school system. How did the arrival of new Asian students in a given school district affect white students? Did white students respond by leaving their schools? If so, what are the mechanisms behind the observed white flight?

This paper shows that there exists white flight from Asian students in public schools in Californian suburban areas: on average, the arrival of one Asian students in a public school district leads to the departure of 2.5 white students from that district. Based on anecdotal and sociological evidence and on our theoretical predictions, the fact that we

[28]Another case where we would observe attraction in the case of racial preferences for Asians would be when whites prefer lower-quality peers and Asians are such students. That hypothesis seems unrealistic and is thus disregarded.

found a departure rate that is greater than one-to-one suggests than bid-up housing prices cannot be the main explanation behind the observed white flight.

Our heterogeneity analysis indicates that the flight occurs in richer school districts, where the arrival of Asian students is associated with an increase in the school district's academic performance (which serves as a proxy for peer quality). We provide suggestive evidence that white families in these richer school districts are fleeing Asians because they try to avoid educational competition with these students, and that this aversion to competition with Asian students seems to outweighs any preferences they may have from improved peer quality (coming from higher-achieving Asian peers). The fact that we find that less-educated (thus poorer) white individuals tend to perceive Asian Americans are less American, compared to more-educated (thus wealthier) white individuals, and that white students in poorer school districts seem to be attracted to Asian students also supports the hypothesis that richer white families are fleeing mainly because of aversion to competition with Asian peers, rather than because of pure racial distaste for Asians. This hypothesis is also backed up by qualitative evidence.

Further investigations show that richer white students are not just leaving the public school system in the school district, but they are leaving the school district as a whole. Indeed, we find that there is white flight of a similar order of magnitude (albeit slightly lower, at a rate of 2.1 instead of 2.5) in school districts with at least one private school. Hence, although some white families prefer to place their children in private schools, the majority of them opt for moving out from the school district.

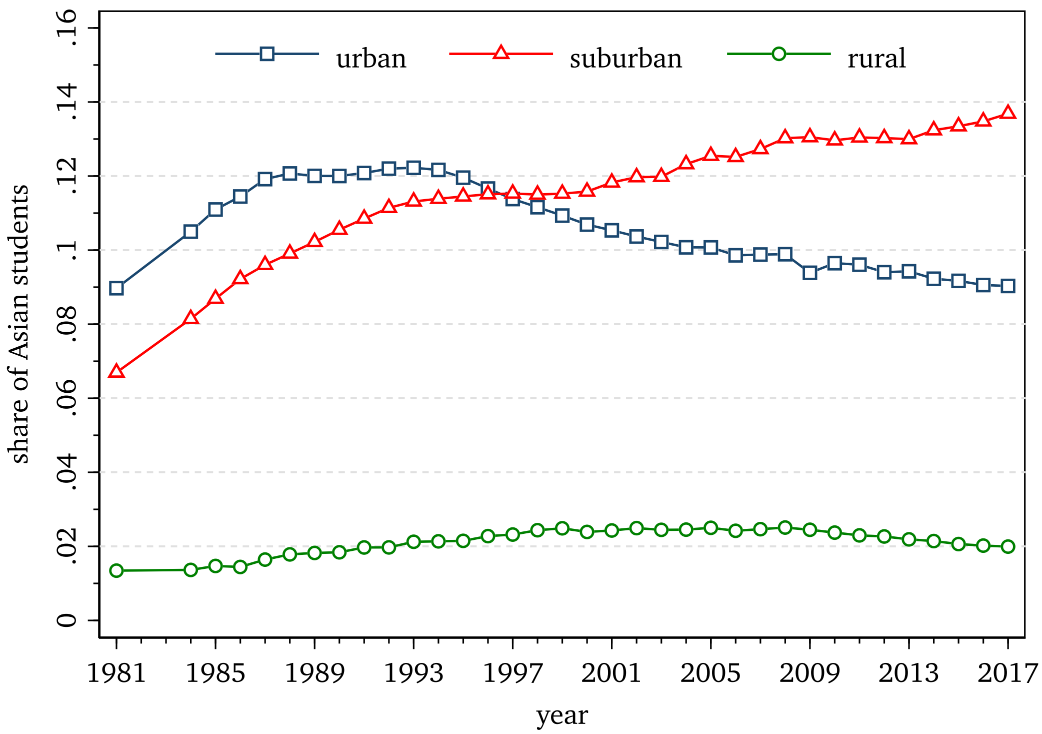
In addition, we find that in poorer public school districts, white students are attracted to Asian students. This result may be surprising at first, but it can be explained by the fact that there are not that many Asian students at the bottom of the school districts' SES distribution and that, since they presumably do not have the financial resources to move out from the school district or place their children in a private school, the tradeoff for white families in those poorer areas is to choose between stereotypically higher-achieving Asian peers and lower-achieving Hispanic and Black peers.

From a policy perspective, our findings highlight issues related to racial integration in schools and call into question the equity of access to resources. If white parents decide to remove their children from public schools, they would contribute less to those schools, in terms of their time, political influence, and non-pecuniary resources. White flight thus precipitates racial inequalities in school quality.

Given the observed white flight, future research may want to study the response of teachers to compositional changes in the student body that they experience in their classroom (e.g., do we also observe a racial compositional change in the teacher body?).

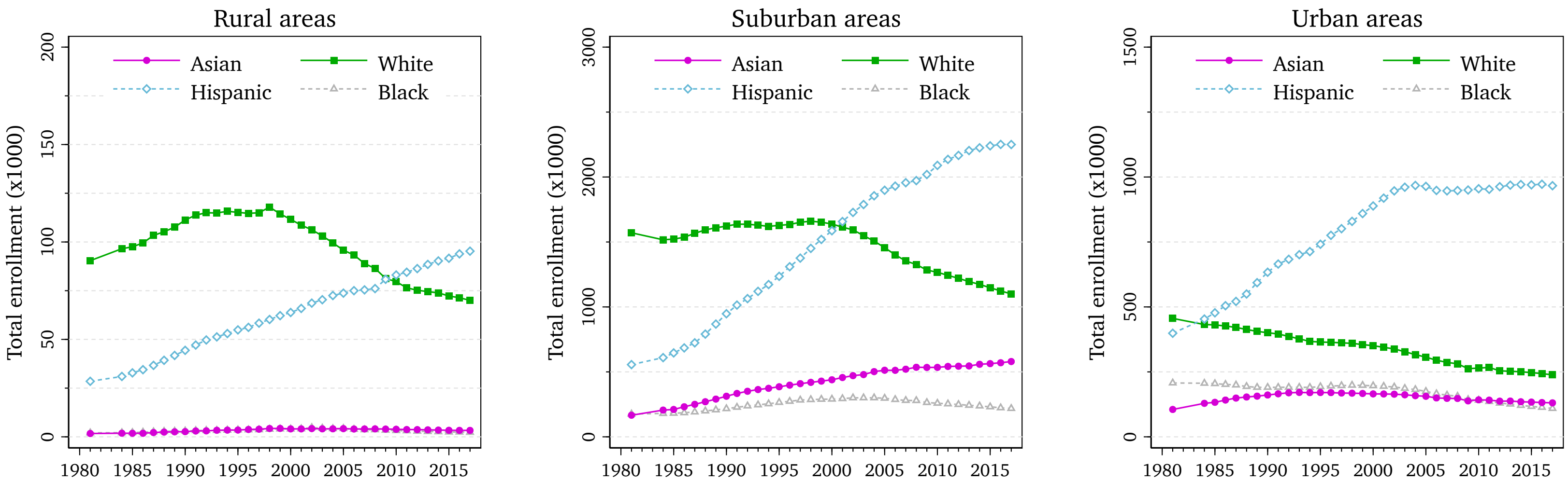
Main Figures

Figure 1: Asian student enrollment in Californian public schools over time, by urban status of district



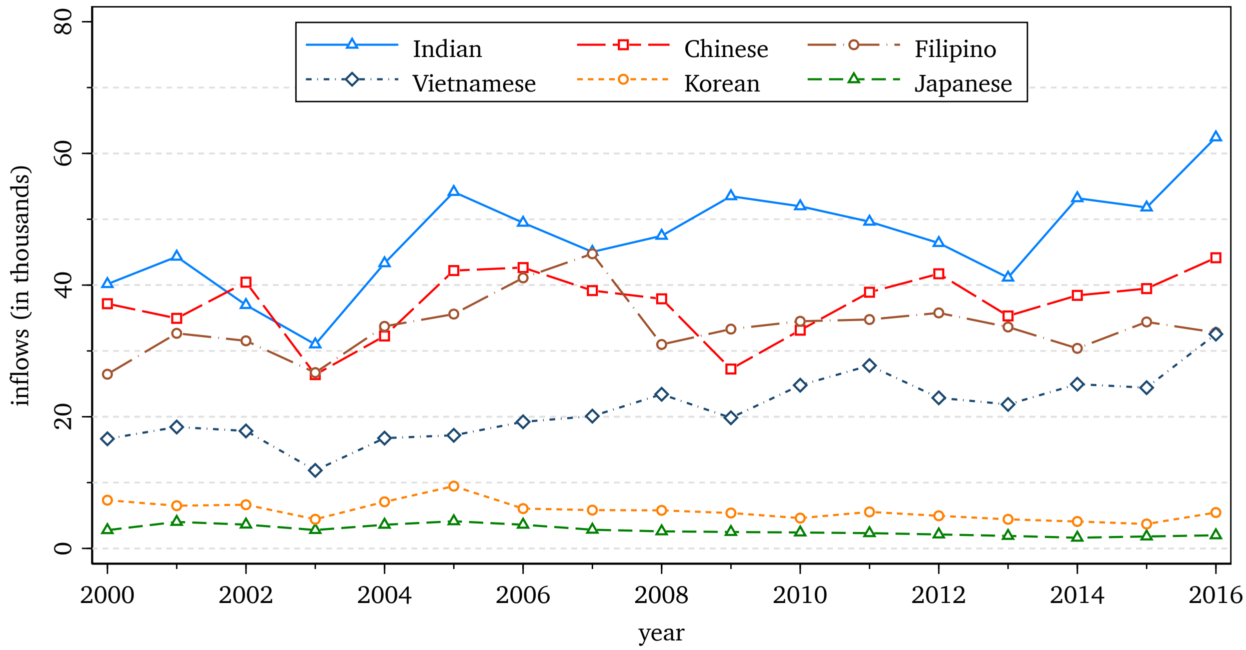
Notes: This figure displays the evolution over time of the share of Asian students in Californian public schools, by urban status of school district. Specifically, the share of Asian students for each urban status type is computed as follows: for each year of interest, we sum up the number of Asian students and the total number of students in the school districts located in a(n) urban/suburban/rural area, and we then divide the sum of Asian students by the total number of students in that given area. The data come from the California Department of Education.

Figure 2: Student enrollment over time (1981-2017), by race/ethnicity and school district's area type



Notes: This figure displays the evolution over time of the enrollment Asian vs. white vs. Hispanic vs. Black students in Californian public school districts located in urban vs. suburban vs. rural areas, over the 1981-2017 period. The data come from the California Department of Education.

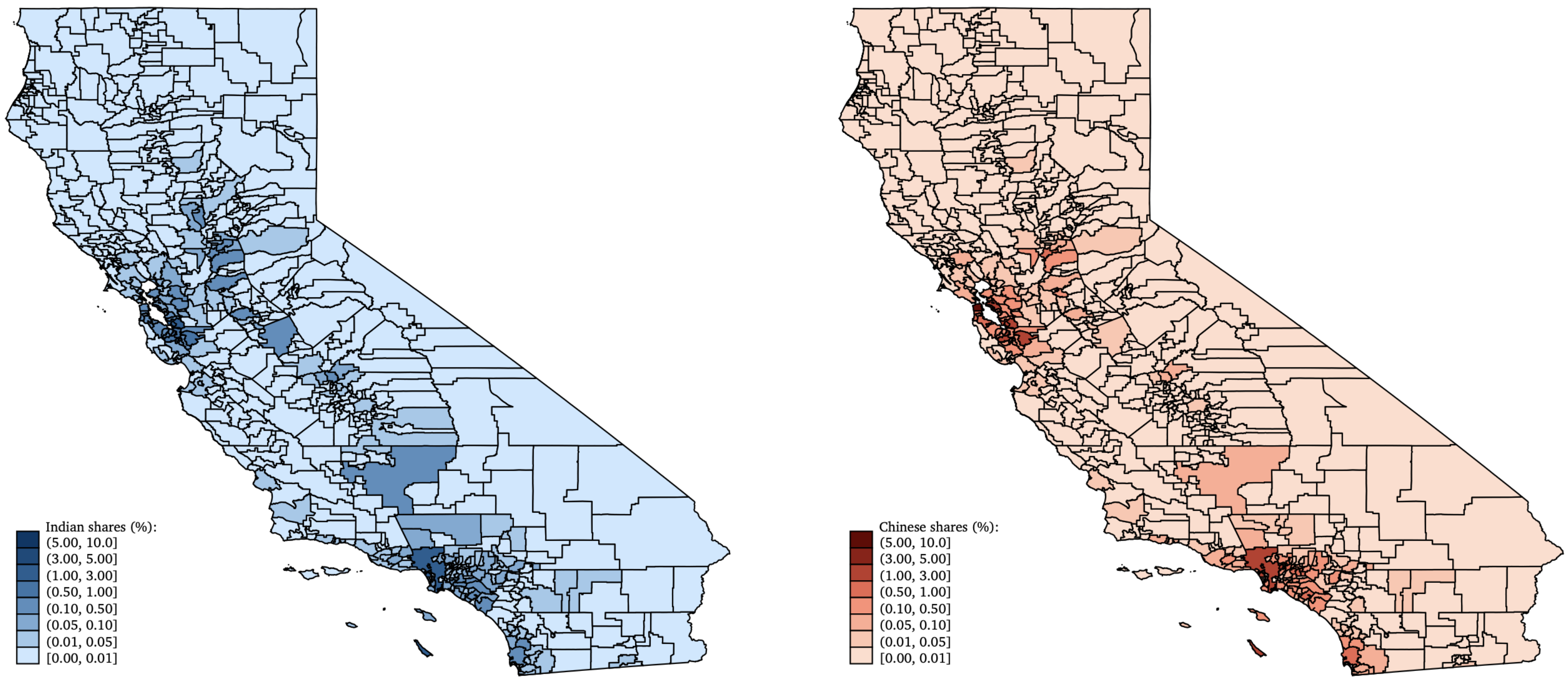
Figure 3: Time series of inflows (new arrivals only) by ethnic group (Asian country of origin)
Source: Department of Homeland Security



Notes: “Inflows” represent only new arrivals. Source: Department of Homeland Security. Indian = Bangladesh + India + Pakistan; Chinese = China + Taiwan + Hong Kong; Vietnamese = Vietnam; Korean = South Korea + North Korea; Japanese = Japan. Data for 2003, 2004 and 2005 are inexistent in the raw data and have therefore been extrapolated as follows. We first compute the share of new arrivals across period 2000-2002 among the total inflows (new arrivals + adjustments of status). The data on total inflows come from the OECD and the Paper Immigration Book – see Figure A.3. We then apply that share to each of the year in the 2003-2005 period, again using total inflows. See Figure A.4 for the equivalent of this figure but using CPS data.

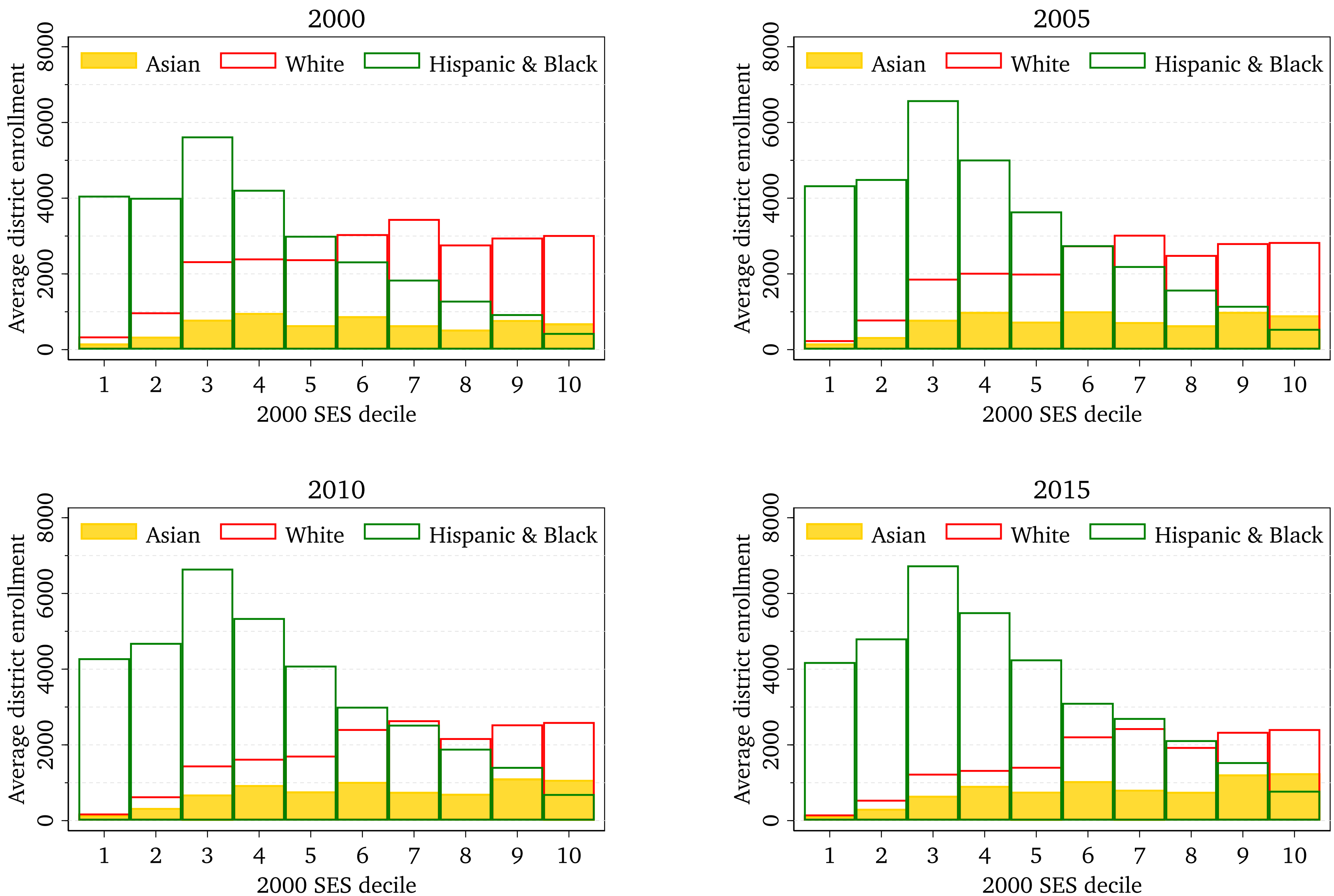
Figure 4: Shares of Indian and Chinese people nationwide who live in a given school district as of 2000

(a) Indian (b) Chinese



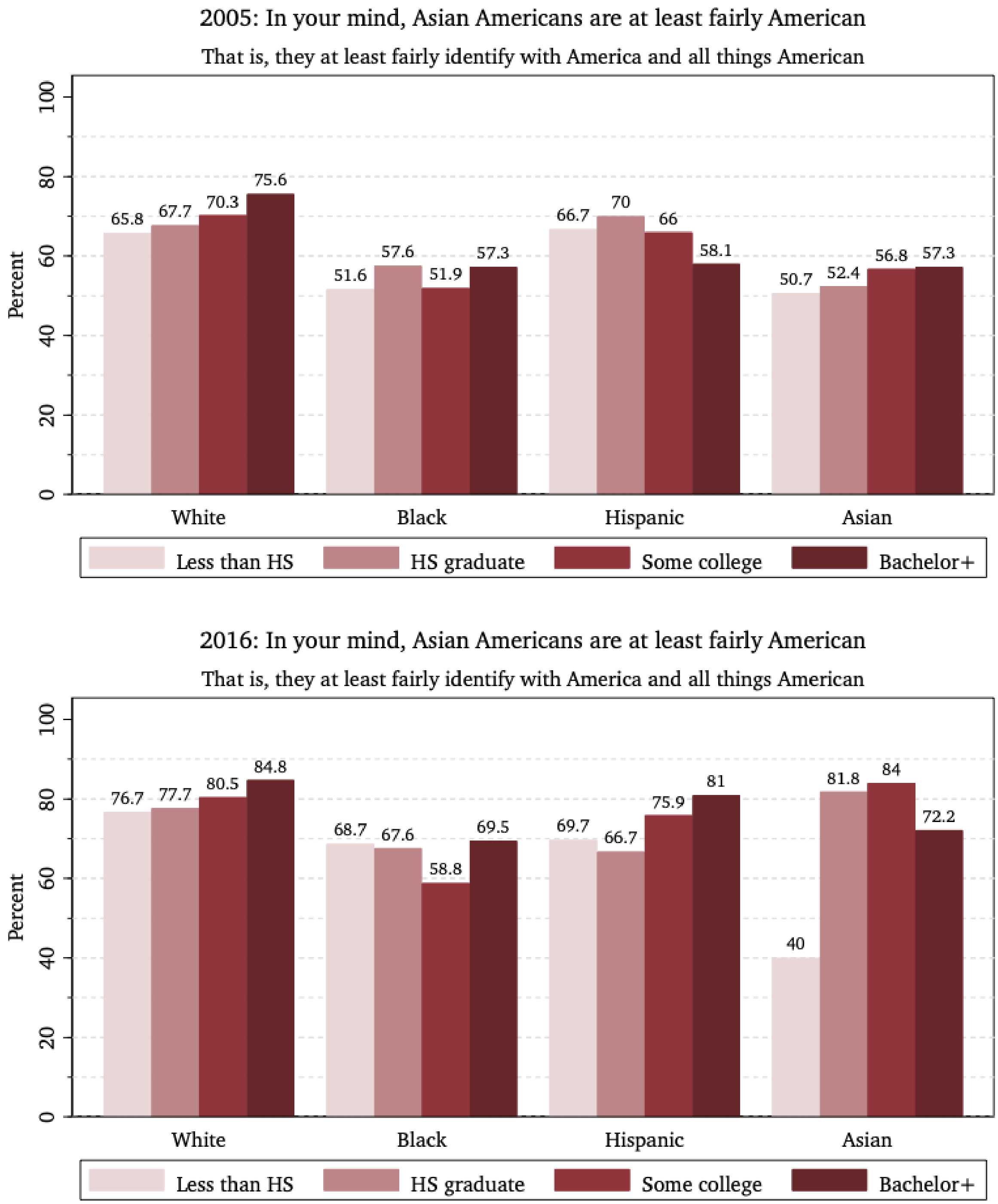
Notes: The shares have been computed as follows: Indian/Chinese population in a school district divided by the nationwide population of Indian/Chinese, then multiplied by 100. Source: DHS & U.S. Census Bureau. Appendix Figure A.5 displays similar maps for Filipino and Vietnamese people. Appendix Figures A.6 and A.7 zoom in the SF Bay area and the LA area.

Figure 5: Distribution of average school-district enrollment in suburban areas



Notes:

Figure 6: Americans' sentiments towards Asian Americans in 2005 and 2016



Notes: This figure shows the shares of Americans within each education category and racial/ethnic group who have answered "fairly American," "strongly American," or "absolutely American" to the following question: "In your mind, how American are Asian Americans? That is, how strongly are they identified with America and all things American?". The data come from the Implicit Association Test (Asian American IAT 2004-2020).

Main Tables

Table 1: Asian enrollment and white departures (2001-2016)

Sample:	Rural			Suburban			Urban		
Specification:	OLS	1st stage	IV	OLS	1st stage	IV	OLS	1st stage	IV
Dependent variable:	White	Asian	White	White	Asian	White	White	Asian	White
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Asian	0.687		11.83	-0.433***		-2.531***	0.502**		0.165
	(0.498)		(8.984)	(0.0790)		(0.702)	(0.218)		(0.389)
$\widehat{\text{AsianPred}}$		-0.676			0.860***			-1.558***	
		(0.471)			(0.242)			(0.224)	
Total_{t-1}	0.560***	0.00726**	0.438***	0.163***	0.185***	0.533***	0.0314	0.0676***	0.0884
	(0.0639)	(0.00366)	(0.101)	(0.0318)	(0.0243)	(0.126)	(0.0805)	(0.0175)	(0.0878)
Observations	1,999	1,999	1,999	9,578	9,578	9,578	432	432	432
F-stat on excl. IV	–	2.00	–	–	12.44	–	–	43.85	–

Notes: This table displays the OLS and 2SLS (including the first-stage) regressions of the number of White students (“White”) on the number of Asian students (“Asian”), controlling for the total number of students in the previous year (“Total_{t-1}”), for each urban status sample. All specifications include year fixed effects and district fixed effects. The unit of observation is a school district $\times$ year. District IV sample used (only the districts for which the instrument is available; Los Angeles Unified and San Francisco Unified Districts dropped) for the 2001-2016 period. The instrument ($\widehat{AsianPred}$) uses 2000 as base year. The inflows data used to construct the instrument come from the Department of Homeland Security (Online Appendix Tables G.2 and G.8 are the corresponding tables using CPS and OECD data, respectively). Spatial HAC (a.k.a. Conley) standard errors reported in parentheses – these standard errors are adjusted for spatial and temporal correlation within 1,000 km and 10 decades. Significance levels: * 10%, ** 5%, *** 1%.

Table 2: Asian enrollment and white departures,
Suburban areas – By average pre-2000 district enrollment growth

Dependent variable:	White					
Specification:	OLS			IV		
Sample:	Non-missing average pre-2000 growth	Average pre-2000 growing	Average pre-2000 shrinking	Non-missing average pre-2000 growth	Average pre-2000 growing	Average pre-2000 shrinking
	(1)	(2)	(3)	(4)	(5)	(6)
Asian	-0.433***	-0.428***	-0.947***	-2.532***	-2.545***	-2.301***
	(0.0790)	(0.0797)	(0.137)	(0.702)	(0.733)	(0.558)
Total_{t-1}	0.163***	0.162***	0.433***	0.534***	0.534***	0.842***
	(0.0318)	(0.0317)	(0.0928)	(0.126)	(0.131)	(0.143)
Observations	9,562	8,860	702	9,562	8,860	702
First-stage F-stat	–	–	–	12.45	11.60	10.24
Dep. var. mean	2,167	2,232	1,348	2,167	2,232	1,348

Notes: Growing (shrinking) districts are those with a non-negative (negative) average annual growth rate over the 1981-2016 period. All specifications include year fixed effects and district fixed effects. The unit of observation is a school district $\times$ year. Sample restricted to suburban areas only and district IV sample (i.e., only the districts for which the instrument is available; Los Angeles Unified and San Francisco Unified Districts dropped) for the 2001-2016 period. The instrument ($\widehat{AsianPred}$) uses 2000 as base year. The inflows data used to construct the instrument come from the Department of Homeland Security. Spatial HAC (a.k.a. Conley) standard errors reported in parentheses – these standard errors are adjusted for spatial and temporal correlation within 1,000 km and 10 decades. Significance levels: * 10%, ** 5%, *** 1%.

Table 3: Asian enrollment and white departures,
Suburban areas – By the presence of private schools

Dependent variable:	White			
Specification:	OLS		IV	
Sample:	No private schools (1)	At least 1 private school (2)	No private schools (3)	At least 1 private school (4)
Asian	0.677**	-0.373***	3.943	-2.145***
	(0.341)	(0.0754)	(3.779)	(0.602)
Total_{t-1}	0.160***	0.152***	-0.0188	0.477***
	(0.0471)	(0.0315)	(0.208)	(0.114)
Observations	3,278	6,300	3,278	6,300
F-stat on excl. IV	–	–	1.48	11.68
Dep. var. mean	519	3,024	519	3,024

Notes: All specifications include year fixed effects and district fixed effects. The unit of observation is a school district $\times$ year. District IV sample used (only the districts for which the instrument is available; Los Angeles Unified and San Francisco Unified Districts dropped) for the 2001-2016 period. The instrument ($\widehat{AsianPred}$) uses 2000 as base year. The inflows data used to construct the instrument come from the Department of Homeland Security (Online Appendix Tables G.5 and G.11 display the results using CPS data and OECD data, respectively). Spatial HAC (a.k.a. Conley) standard errors reported in parentheses – these standard errors are adjusted for spatial and temporal correlation within 1,000 km and 10 decades. Significance levels: * 10%, ** 5%, *** 1%.

Table 4: Asian share and peer quality
Suburban areas – By 2000 SES index

Dependent variable:	Academic Performance Index (peer quality)							
Specification:	OLS				IV			
Sample:	Non-missing 2000 school district SES index	Top third 2000 school district SES index	Middle third 2000 school district SES index	Bottom third 2000 school district SES index	Non-missing 2000 school district SES index	Top third 2000 school district SES index	Middle third 2000 school district SES index	Bottom third 2000 school district SES index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Asian share	-105.3***	60.17**	21.38	-4.883	-92.61	154.4**	283.1	1450.2*
	(34.38)	(28.41)	(41.00)	(38.45)	(98.58)	(60.51)	(308.0)	(810.1)
Total_{t-1} ($\div$ 1000)	0.256	0.178	1.812***	0.398	0.219	-0.420	0.969	-0.687
	(0.489)	(0.755)	(0.697)	(0.665)	(0.588)	(0.863)	(1.161)	(1.087)
Observations	7,152	2,487	2,401	2,264	7,152	2,487	2,401	2,264
First-stage F-stat	–	–	–	–	31.37	122.10	14.25	3.78
Dep. var. mean	755.1	836.5	742.4	679.0	755.1	836.5	742.4	679.0

Notes: API stands for Academic Performance Index and ranges from 200 to 1000; it serves as a proxy for initial (i.e., 2000) school quality. All specifications include year fixed effects and district fixed effects. The unit of observation is a school district $\times$ year. Sample restricted to suburban areas only and district IV sample (i.e., only the districts for which the instrument is available; Los Angeles Unified and San Francisco Unified Districts dropped) for the 2001-2016 period. The instrument ($\widehat{AsianPred}$) uses 2000 as base year. The inflows data used to construct the instrument come from the Department of Homeland Security. Spatial HAC (a.k.a. Conley) standard errors reported in parentheses – these standard errors are adjusted for spatial and temporal correlation within 1,000 km and 10 decades. Significance levels: * 10%, ** 5%, *** 1%.

Table 5: Asian enrollment and white departures
Suburban areas – By 2000 school districts' socio-economic status (SES) index

Dependent variable:	White							
Specification:	OLS				IV			
Sample:	Non-missing 2000 school district SES index	Top third 2000 school district SES index	Middle third 2000 school district SES index	Bottom third 2000 school district SES index	Non-missing 2000 school district SES index	Top third 2000 school district SES index	Middle third 2000 school district SES index	Bottom third 2000 school district SES index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Asian	-0.433***	-0.652***	-1.112***	0.881***	-2.531***	-1.246***	-3.083***	1.709***
	(0.0790)	(0.0858)	(0.199)	(0.185)	(0.702)	(0.230)	(0.608)	(0.297)
$Total_{t-1}$	0.163***	0.281***	0.314***	-0.00540	0.533***	0.456***	0.675***	-0.0842**
	(0.0318)	(0.0783)	(0.0614)	(0.0356)	(0.126)	(0.106)	(0.130)	(0.0353)
Observations	9,578	3,343	3,214	3,021	9,578	3,343	3,214	3,021
First-stage F-stat	–	–	–	–	12.44	67.27	24.76	47.21
Dep. var. mean	2,167	2,803	2,577	1,026	2,167	2,803	2,577	1,026

Notes: The 2000 school district index encompasses school quality and the percent of students eligible to free or reduced-price meals as of 2000. All specifications include year fixed effects and district fixed effects. The unit of observation is a school district $\times$ year. Sample restricted to suburban areas only and district IV sample (i.e., only the districts for which the instrument is available; Los Angeles Unified and San Francisco Unified Districts dropped) for the 2001-2016 period. The instrument ($\widehat{AsianPred}$) uses 2000 as base year. The inflows data used to construct the instrument come from the Department of Homeland Security. Spatial HAC (a.k.a. Conley) standard errors reported in parentheses – these standard errors are adjusted for spatial and temporal correlation within 1,000 km and 10 decades. Significance levels: * 10%, ** 5%, *** 1%.

Table 6: Asian enrollment and white departures
Suburban areas – By school grade

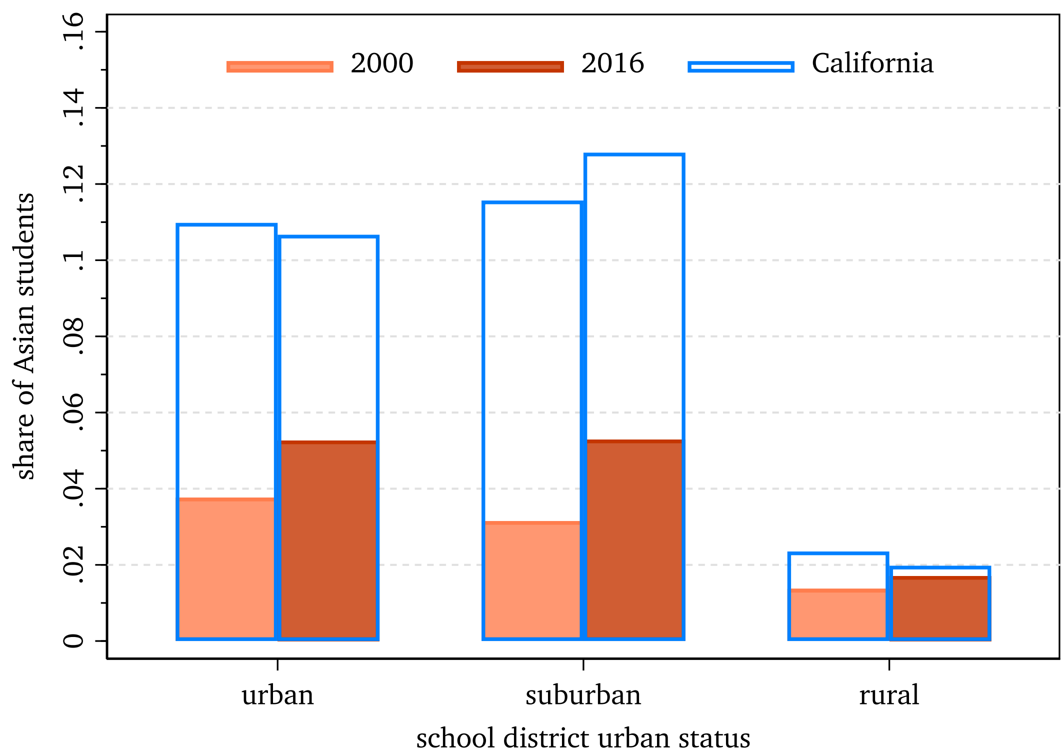
Dependent variable:	White			
Specification:	OLS		IV	
Sample:	Grades K-8	Grades 9-12	Grades K-8	Grades 9-12
	(1)	(2)	(3)	(4)
Asian	-0.374***	-0.232**	-2.324***	-2.560***
	(0.0743)	(0.0978)	(0.698)	(0.584)
Total_{t-1}	0.104***	0.0476***	0.345***	0.192***
	(0.0226)	(0.0118)	(0.0847)	(0.0407)
Observations	9,043	5,065	9,043	5,065
F-stat on excl. IV	–	–	11.88	18.88
Dep. var. mean	1,543	1,336	1,543	1,336

Notes: All specifications include year fixed effects and district fixed effects. The unit of observation is a school district $\times$ year. District IV sample used (only the districts for which the instrument is available; Los Angeles Unified and San Francisco Unified Districts dropped) for the 2001-2016 period. The instrument ($\widehat{AsianPred}$) uses 2000 as base year. The inflows data used to construct the instrument come from the Department of Homeland Security. Spatial HAC (a.k.a. Conley) standard errors reported in parentheses – these standard errors are adjusted for spatial and temporal correlation within 1,000 km and 10 decades. Significance levels: * 10%, ** 5%, *** 1%.

Appendix

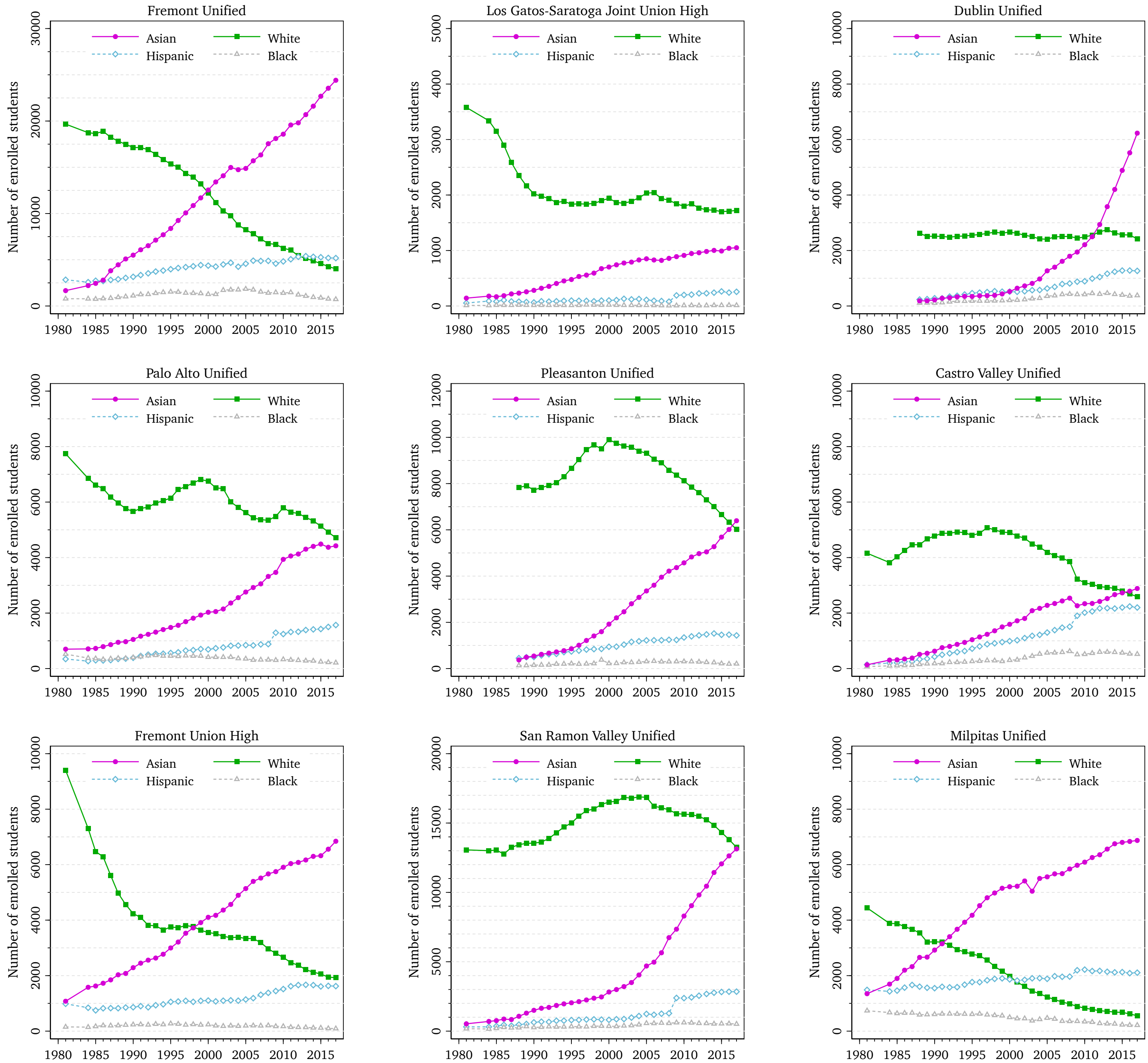
A Appendix Figures and Tables

Appendix Figure A.1: Asian student enrollment in the U.S. and California, by urban status of school district (2000 and 2016)



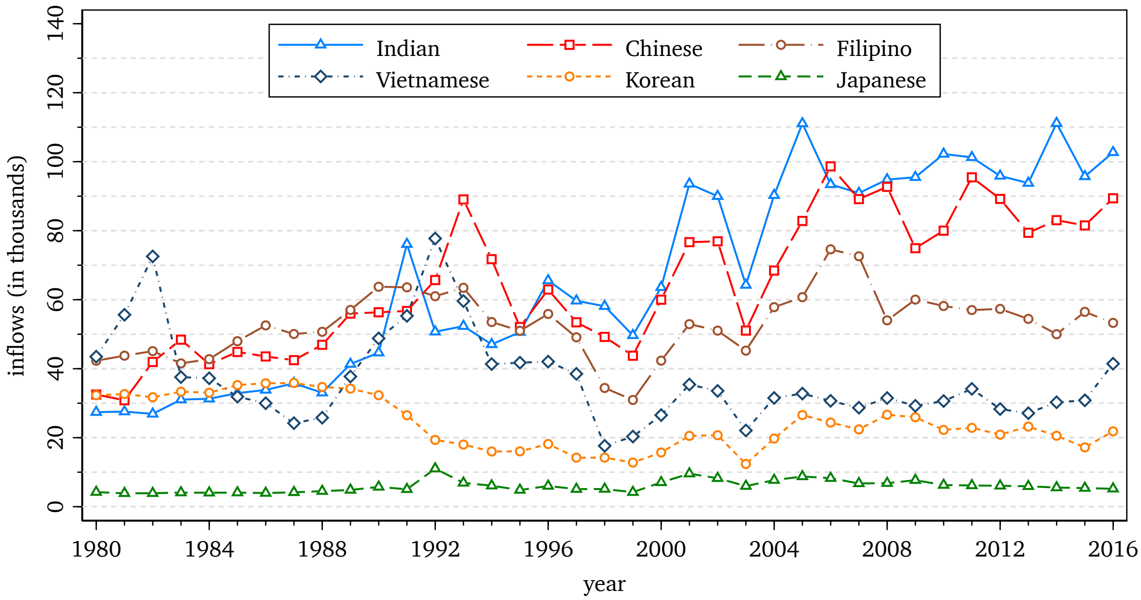
Notes: This figure displays the evolution over time of the share of Asian students enrolled in public schools in the U.S. (excluding California) and in California, by urban status of school district. Specifically, the share of Asian students for each school-district urban status is computed as follows: for each year of interest, we sum up the number of Asian students and the total number of students in the schools located in a(n) urban/suburban/rural area, and we then divide the sum of Asian students by the total number of students in that given area. The data come from the National Center for Education and Statistics (NCES).

Appendix Figure A.2: Enrollment of students over time (1981-2017), by race/ethnicity
Select San Francisco Bay area school districts



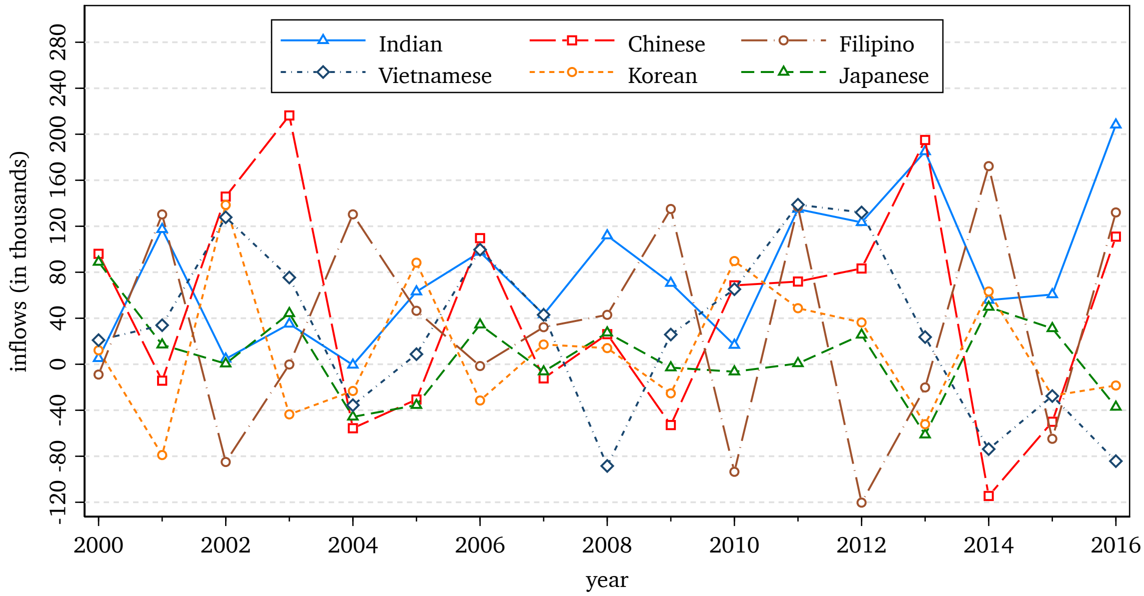
Notes: This figure displays the evolution over time of the enrollment Asian vs. white vs. Hispanic vs. Black students in Californian public schools, in select Bay area school districts, over the 1981-2017 period. The data come from the California Department of Education.

Appendix Figure A.3: Time series of inflows (new arrivals + adjustments of status) by ethnic group (Asian country of origin)
Sources: OECD & Paper Immigration Book



Notes: "Inflows" represent both new status adjustments for immigrants already present in the U.S. and new arrivals. Indian = Bangladesh + India + Pakistan; Chinese = China + Taiwan + Hong Kong; Vietnamese = Vietnam; Korean = South Korea + North Korea; Japanese = Japan. Sources: OECD & Paper Immigration Book.

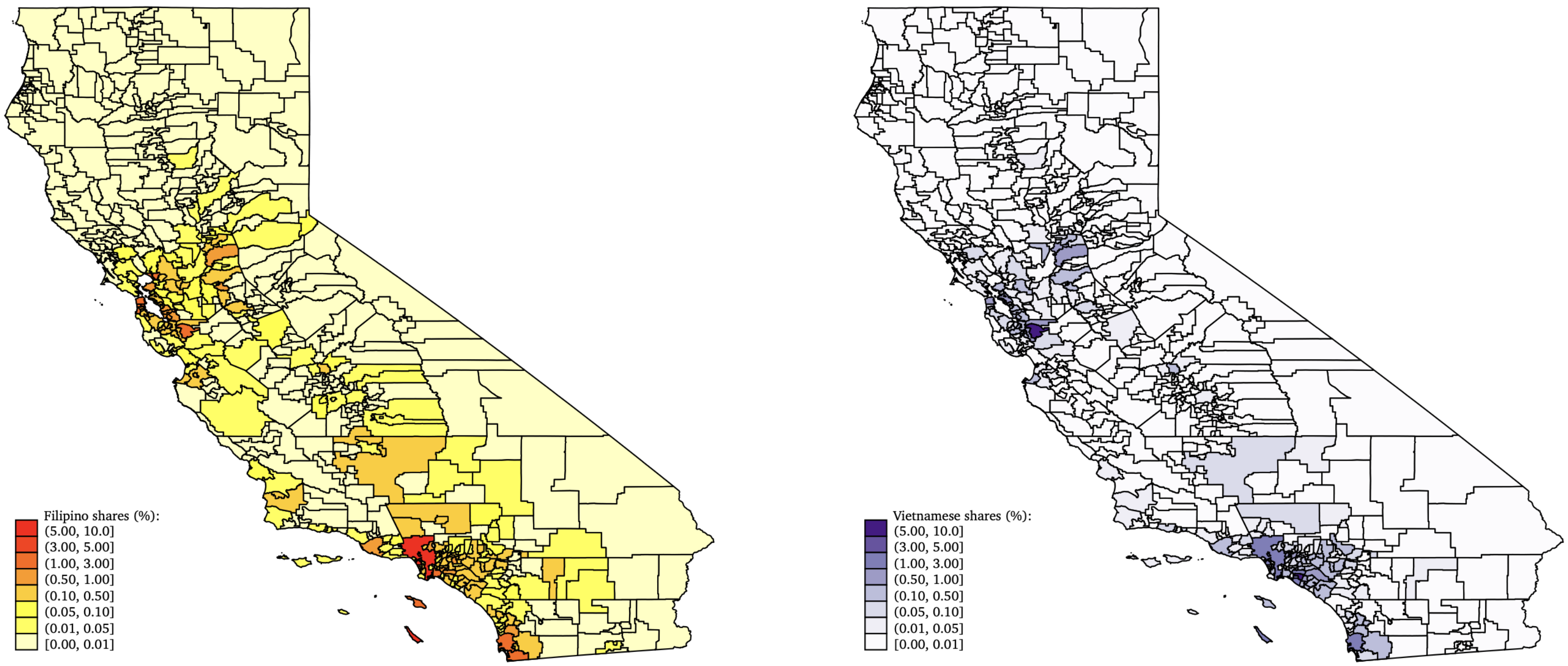
Appendix Figure A.4: Time series of inflows (new arrivals only) by ethnic group (Asian country of origin)
Source: Current Population Survey



Notes: "Inflows" represent only new arrivals. Source: Current Population Survey. Indian = Bangladesh + India + Pakistan; Chinese = China + Taiwan + Hong Kong; Vietnamese = Vietnam; Korean = South Korea + North Korea; Japanese = Japan. We compute "inflows" (i.e., new arrivals) as follows: for each year, we compute the difference between the number of individuals whose country of birth corresponds to the Asian ethnic group of interest in a given year and the preceding year. Of course, that computation is imperfect as it does not take into account new deaths every year, nor does it account for departures from the U.S..

Appendix Figure A.5: Shares of Filipino and Vietnamese people nationwide who live in a given school district as of 2000

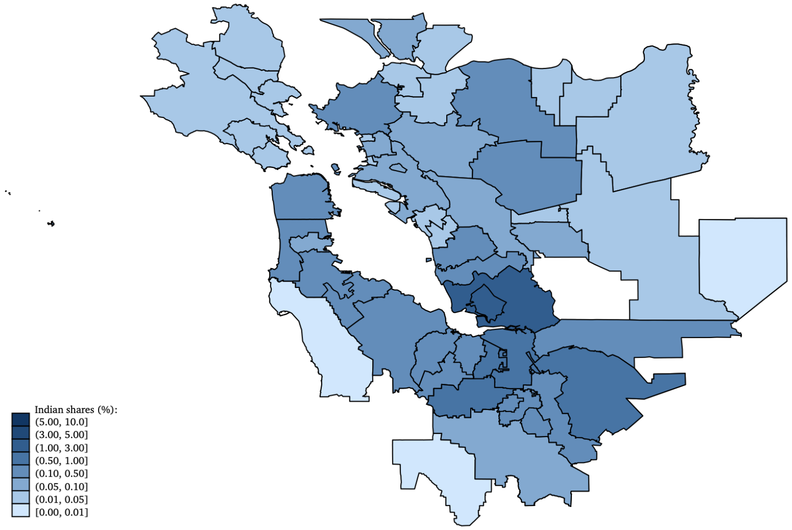
(a) Indian (b) Chinese



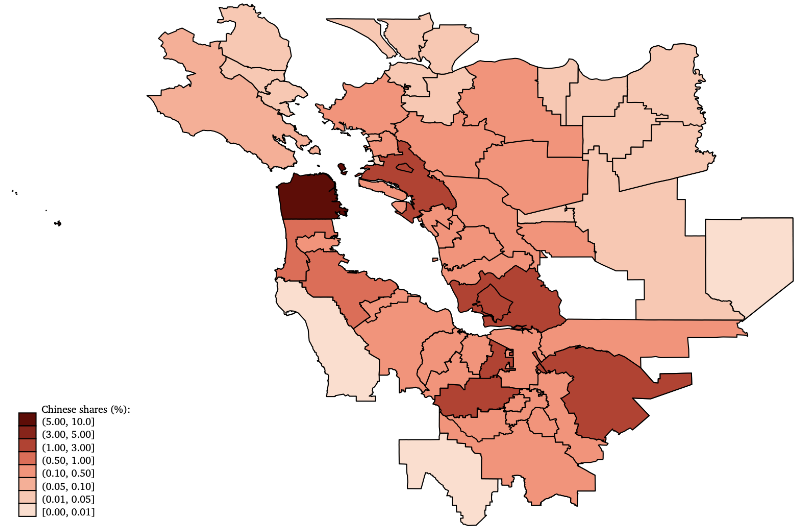
Notes: The shares have been computed as follows: Filipino/Vietnamese population in a school district divided by the nationwide population of Filipino/Vietnamese, then multiplied by 100. Source: DHS & U.S. Census Bureau. Appendix Figures A.6 and A.7 zoom in the SF Bay area and the LA area.

Appendix Figure A.6: Shares of an Asian ethnic group nationwide who live in a school district in the Bay area as of 2000

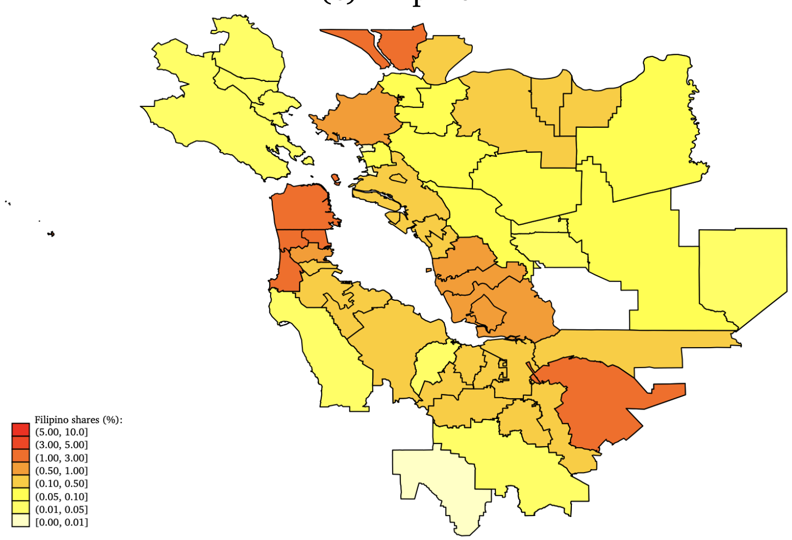
(a) Indian



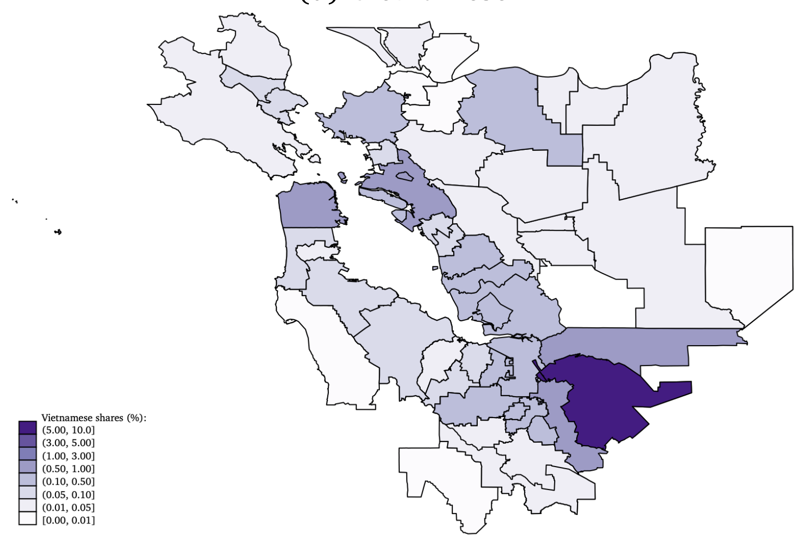
(b) Chinese



(c) Filipino



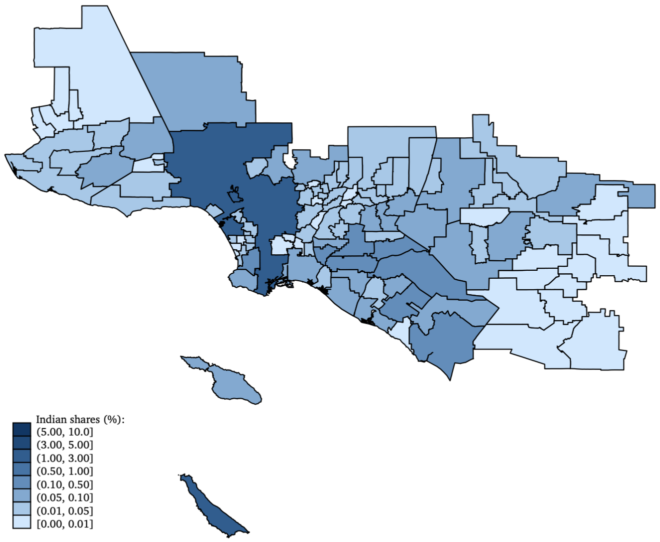
(d) Vietnamese



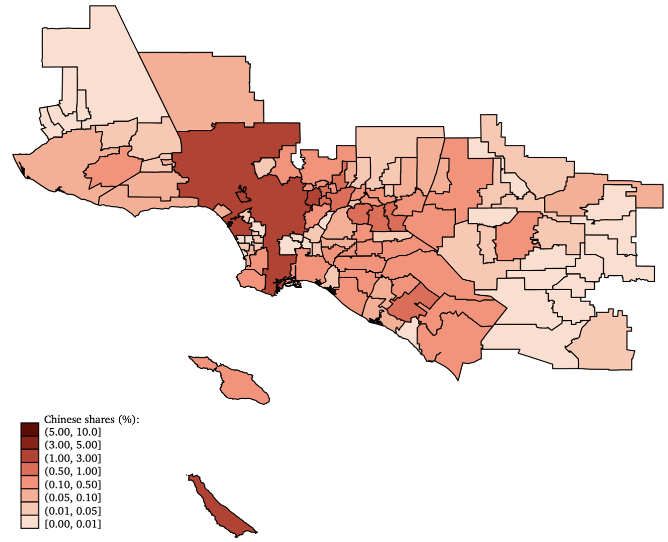
Notes: The shares have been computed as follows: Indian/Chinese/Filipino/Vietnamese population in a school district divided by the nationwide population of Indian/Chinese, then multiplied by 100. Source: DHS & U.S. Census Bureau.

Appendix Figure A.7: Shares of an Asian ethnic group nationwide who live in a school district in the LA area as of 2000

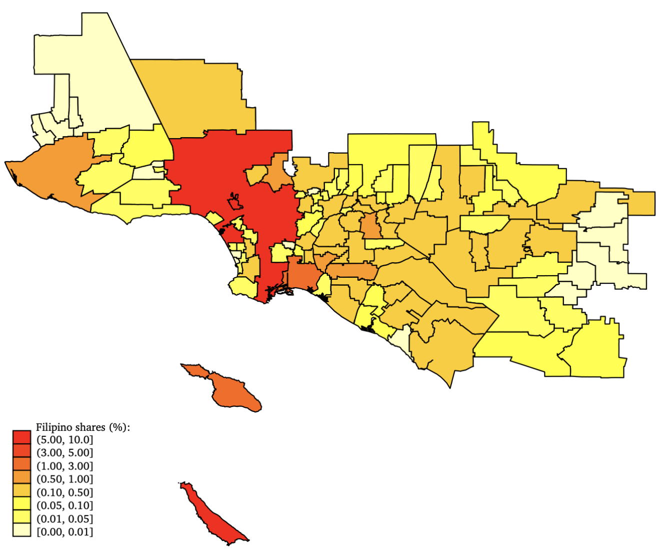
(a) Indian



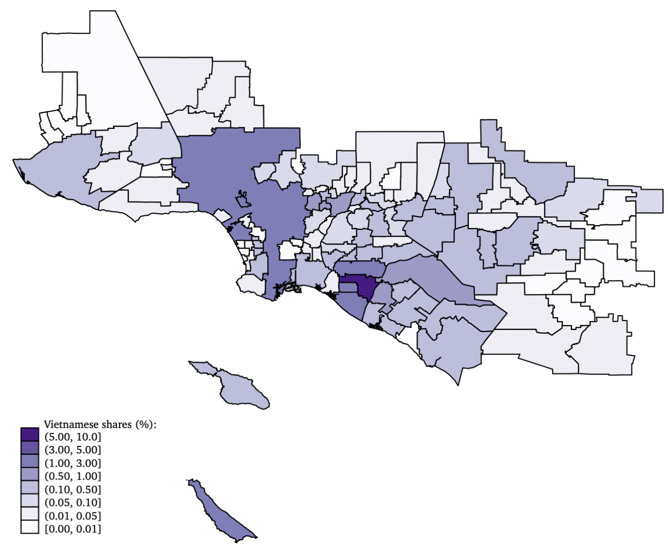
(b) Chinese



(c) Filipino



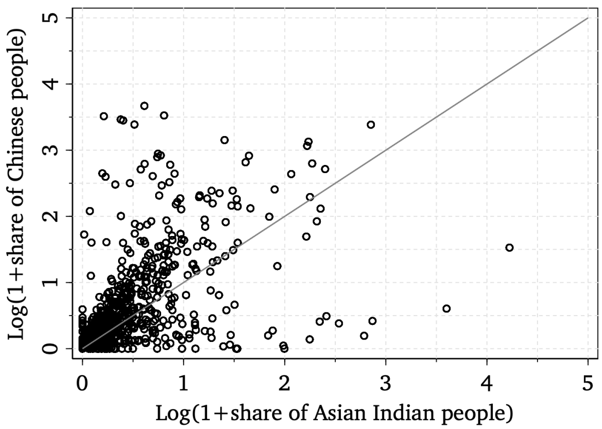
(d) Vietnamese



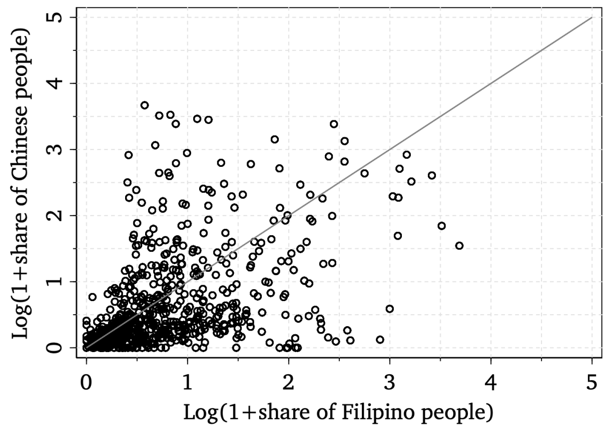
Notes: The shares have been computed as follows: Indian/Chinese/Filipino/Vietnamese population in a school district divided by the nationwide population of Indian/Chinese, then multiplied by 100. Source: DHS & U.S. Census Bureau.

Appendix Figure A.8: Scatter plots of Bartik-style shares in suburban areas as of 2000

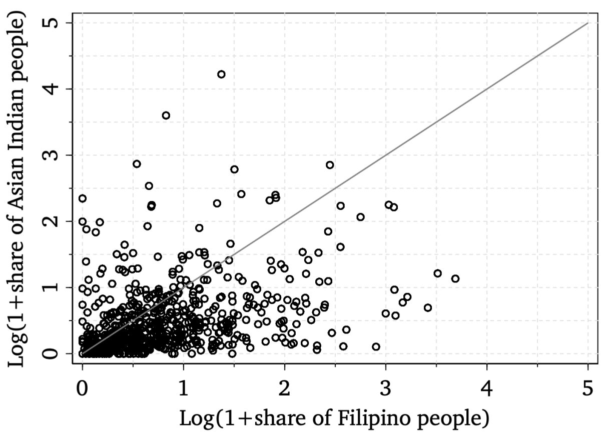
(a) Chinese vs. Indian



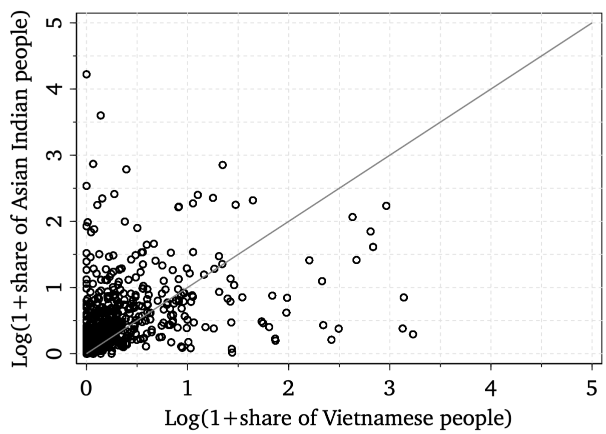
(b) Chinese vs. Filipino



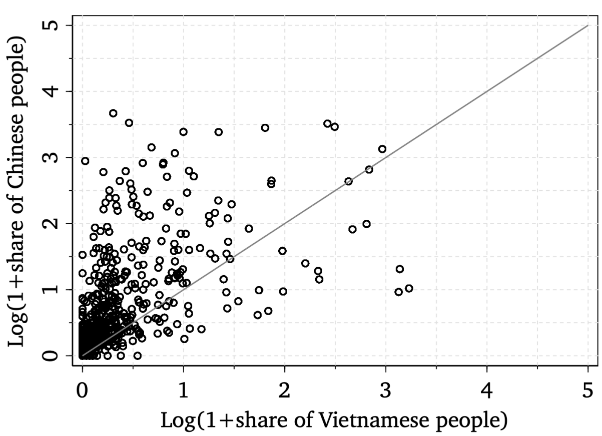
(c) Indian vs. Filipino



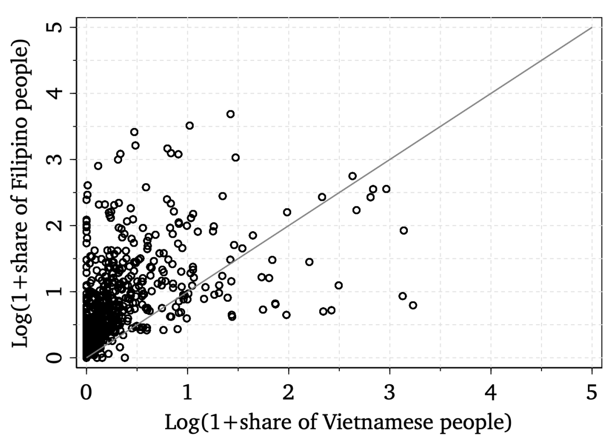
(d) Indian vs. Vietnamese



(e) Chinese vs. Vietnamese

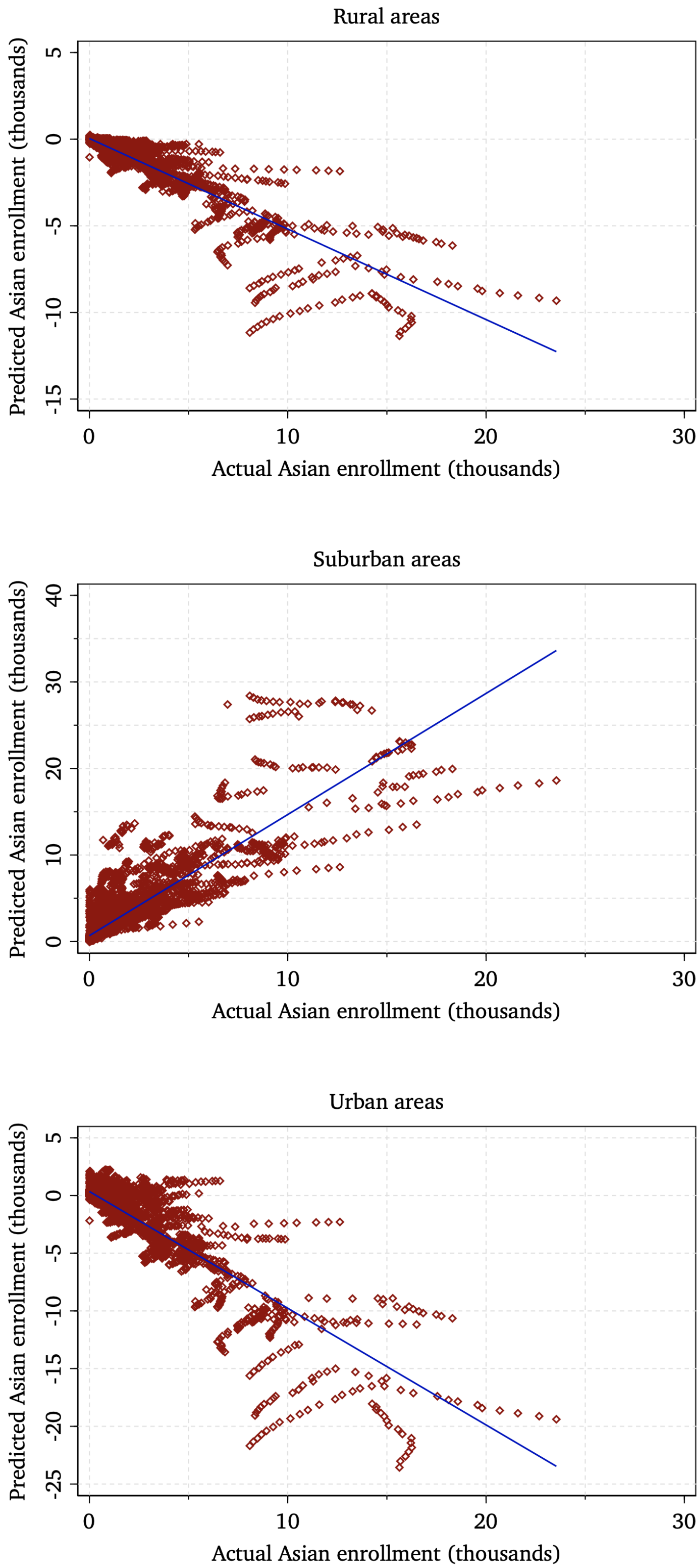


(f) Filipino vs. Vietnamese



Notes: The "Bartik-style shares" correspond to the percentage of a given Asian ethnic group in a school district. Source: DHS & U.S. Census Bureau.

Appendix Figure A.9: Scatter plots of predicted vs. actual Asian enrollment, by area type



Notes: This figure is a scatter plot of the predicted Asian enrollment against the actual Asian enrollment (with a fitted line), by area subsample.

Appendix Table A.1: Asian enrollment and white departures (2001-2016)
Full sample

Specification:	OLS	1st stage	IV
Dependent variable:	White (1)	Asian (2)	White (3)
Asian	-0.298***		-5.037*
	(0.0977)		(3.034)
$\widehat{\text{AsianPred}}$		0.410*	
		(0.245)	
Total_{t-1}	0.146***	0.182***	0.981*
	(0.0317)	(0.0240)	(0.534)
Observations	12,009	12,009	12,009
F-stat on excl. IV	–	2.76	–

Notes: This table is the equivalent of Table 1 but for the full sample. It displays the OLS and 2SLS (including the first-stage) regressions of the number of White students ("White") on the number of Asian students ("Asian"), controlling for the total number of students in the previous year ("Total_{t-1}"). All specifications include year fixed effects and district fixed effects. The unit of observation is a school district $\times$ year. District IV sample used (only the districts for which the instrument is available; Los Angeles Unified and San Francisco Unified Districts dropped) for the 2001-2016 period. The instrument ($\widehat{AsianPred}$) uses 2000 as base year. The inflows data used to construct the instrument come from the Department of Homeland Security. Spatial HAC (a.k.a. Conley) standard errors reported in parentheses – these standard errors are adjusted for spatial and temporal correlation within 1,000 km and 10 decades. Significance levels: * 10%, ** 5%, *** 1%.

Appendix Table A.2: Asian enrollment and white departures (2001-2016)
Full sample – 1990 as base year for the instrument

Specification:	OLS	1st stage	IV
Dependent variable:	White (1)	Asian (2)	White (3)
Asian	-0.304*** (0.0986)		74.17 (593.2)
$\widehat{\text{AsianPred}}$		-0.0104 (0.0830)	
Total$_{t-1}$	0.149*** (0.0300)	0.151*** (0.0237)	-11.13 (90.12)
Observations	10,983	10,983	10,983
First-stage F-stat	–	–	0.02

Notes: This table is the equivalent of Table A.1 but it uses 1990 as the base year to construct the instrument ($\widehat{AsianPred}$). It displays the OLS and 2SLS (including the first-stage) regressions of the number of White students ("White") on the number of Asian students ("Asian"), controlling for the total number of students in the previous year ("Total$_{t-1}$"), for the full sample. All specifications include year fixed effects and district fixed effects. The unit of observation is a school district $\times$ year. District IV sample used (only the districts for which the instrument is available; Los Angeles Unified and San Francisco Unified Districts dropped) for the 2001-2016 period. The inflows data used to construct the instrument come from the OECD and the Paper Immigration Book. Spatial HAC (a.k.a. Conley) standard errors reported in parentheses – these standard errors are adjusted for spatial and temporal correlation within 1,000 km and 10 decades. Significance levels: * 10%, ** 5%, *** 1%.

Appendix Table A.3: Asian enrollment and white departures (2001-2016)
By urban status of district – 1990 as base year for the instrument

Sample:	Rural			Suburban			Urban		
Specification:	OLS	1st stage	IV	OLS	1st stage	IV	OLS	1st stage	IV
Dependent variable:	White (1)	Asian (2)	White (3)	White (4)	Asian (5)	White (6)	White (7)	Asian (8)	White (9)
Asian	1.285*		2.600**	-0.441***		-4.104**	0.504***		0.397
	(0.689)		(1.159)	(0.0745)		(1.792)	(0.186)		(0.323)
$\widehat{\text{AsianPred}}$		-0.420***			0.239**			-0.402***	
		(0.0607)			(0.112)			(0.0719)	
Total_{t-1}	0.515***	0.00998***	0.500***	0.147***	0.164***	0.706***	0.118*	0.0206	0.133*
	(0.0631)	(0.00243)	(0.0654)	(0.0294)	(0.0251)	(0.260)	(0.0708)	(0.0203)	(0.0731)
Observations	1,725	1,725	1,725	8,778	8,778	8,778	480	480	480
First-stage F-stat	–	–	47.31	–	–	4.46	–	–	30.60

Notes: This table is the equivalent of Table 1 but it uses 1990 as the base year to construct the instrument ($\widehat{AsianPred}$). It displays the OLS and 2SLS (including the first-stage) regressions of the number of White students ("White") on the number of Asian students ("Asian"), controlling for the total number of students in the previous year ("Total_{t-1}"). All specifications include year fixed effects and district fixed effects. The unit of observation is a school district $\times$ year. District IV sample used (only the districts for which the instrument is available; Los Angeles Unified and San Francisco Unified Districts dropped) for the 2001-2016 period. The inflows data used to construct the instrument come from the OECD and the Paper Immigration Book. Spatial HAC (a.k.a. Conley) standard errors reported in parentheses – these standard errors are adjusted for spatial and temporal correlation within 1,000 km and 10 decades. Significance levels: * 10%, ** 5%, *** 1%.

Appendix Table A.4: First stage, second stage, and reduced form, using predicted IV for each Asian ethnic group

(a) First-stage results

Dependent variable:	Asian					
Asian ethnic group IV:	Indian	Chinese	Filipino	Vietnamese	Korean	Japanese
	(1)	(2)	(3)	(4)	(5)	(6)
Predicted group-specific IV	0.605***	0.351***	1.094**	0.112***	1.578***	3.436***
	(0.108)	(0.0813)	(0.452)	(0.0250)	(0.501)	(1.147)
$Total_{t-1}$	0.166***	0.179***	0.175***	0.179***	0.181***	0.179***
	(0.0220)	(0.0234)	(0.0237)	(0.0243)	(0.0246)	(0.0243)
Observations	11,143	11,143	11,143	11,143	11,143	11,143
F-stat on excl. IV	30.84	18.41	5.78	19.97	9.79	8.86

(b) Second-stage results

Dependent variable:	White					
Asian ethnic group IV:	Indian	Chinese	Filipino	Vietnamese	Korean	Japanese
	(1)	(2)	(3)	(4)	(5)	(6)
Asian	-1.384***	-1.376***	-6.009***	-2.371***	-3.215***	-3.815***
	(0.255)	(0.261)	(2.322)	(0.288)	(0.776)	(1.145)
$Total_{t-1}$	0.329***	0.327***	1.150***	0.504***	0.654***	0.760***
	(0.0565)	(0.0565)	(0.379)	(0.0760)	(0.128)	(0.203)
Observations	11,143	11,143	11,143	11,143	11,143	11,143
F-stat on excl. IV	30.84	18.41	5.78	19.97	9.79	8.86

(c) Reduced-form results

Dependent variable:	White					
Asian ethnic group IV:	Indian	Chinese	Filipino	Vietnamese	Korean	Japanese
	(1)	(2)	(3)	(4)	(5)	(6)
Predicted group-specific IV	-0.837***	-0.483***	-6.572***	-0.266***	-5.074***	-13.11***
	(0.127)	(0.0598)	(0.573)	(0.0477)	(0.681)	(1.393)
$Total_{t-1}$	0.0991***	0.0812***	0.101***	0.0794***	0.0716***	0.0781***
	(0.0240)	(0.0243)	(0.0194)	(0.0244)	(0.0238)	(0.0214)
Observations	11,143	11,143	11,143	11,143	11,143	11,143

Notes: All specifications include year fixed effects and district fixed effects. The unit of observation is a school district $\times$ year. Suburban district IV sample used (only the districts for which the instrument is available; Los Angeles Unified and San Francisco Unified Districts dropped) for the 2001-2016 period. The instrument uses 2000 as base year. The inflows data used to construct the instrument come from the Department of Homeland Security. Spatial HAC (a.k.a. Conley) standard errors reported in parentheses – these standard errors are adjusted for spatial and temporal correlation within 1,000 km and 10 decades. Significance levels: * 10%, ** 5%, *** 1%.

B Asian Migrations to the United States

For over a century between 1850 and 1960, the United States struggled to reconcile its identity as an equal-rights nation of European immigrants with its rejection of a different set of racially distinct Asian immigrants. The first waves of Chinese, Japanese, Korean, and Filipino immigrants to the US, who initially settled on the West Coast as contract workers on Hawaiian plantations or as Transcontinental Railroad workers on the continent, were racialized as the "Yellow Peril" invasion. Most of these immigrants had to borrow money for the cost of their passage to the United States and worked for a fixed number of years at contract wages to pay it back, but this practice attached a stigma of unfree "coolie" labor to Asians. The racialization of the "coolie" label ascribed free will, independence, and citizenship to White men and none of the above to Asian men. Unlike African Americans and Mexican Americans, Asians' status as a wholly distinct immigrant group who lacked a minority presence in the United States before countryhood also contributed to the idea that Asians were unassimilable and excludable (Hsu, 2016).

These early racial beliefs drove much of the United States' 19th and 20th century immigration policy, beginning with the 1790 Nationality Act, which limited the right of citizenship by naturalization to "free White persons." Through the 1870s, Congress passed a series of bills aimed at limiting Chinese entry (for instance, by restricting prostitute entry, as most Chinese women were thought to be prostitutes, and by limiting the number of Chinese passengers per ship), culminating in the 1882 Chinese Restriction Act; Chinese exclusion was not repealed until 1943. A 1907 Congress-appointed commission on eugenics and immigrations advised that the United States impose immigration quotas in order to reach its ideal racial composition, giving preference to the most "readily assimilated" races (Hsu, 2016). The resulting 1924 Johnson-Reed Immigration Act barred all immigration from Asia. Anti-Asian sentiment reached peak tension in this era during World War II, against not just Japanese Americans but anyone who resembled the "enemy race" (Takaki, 1998).

The turning tide toward Asian acceptance began in 1940, first with a reconsideration of the status of the Chinese (as the United States' main World War II ally against Japan), then followed by admittance of Indians and Filipinos, and finally of Japanese. Up until this point, Asian exclusion had clearly worked – during the 1930s, fewer than 10,000 total Chinese, Japanese, Korean, Filipino, and Indian immigrants entered the United States. Only after the passing of the 1965 Immigration and Nationalization Act, which overturned the national-origins quota system, did the Asian American population begin growing rapidly as immigrants previously barred in the Asian-Pacific Triangle qualified for education and employment visas (Hsu, 2016).

The immigrants who came after 1965 were positively selected on the basis of education, skill, and employability (Pew Research Center, 2012). Today's "model minority" Asian stereotype is based in large part on the perception of these highly educated, self-selected migrants, whose immigration growth disproportionately surpassed other Asian groups (Hsu, 2016). This stereotype claims that Asians "avoid the negative outcomes associated with other minority groups because they possess an inherent cultural orientation and work ethic that other non-Whites supposedly lack" (Jiménez and Horowitz, 2013). Though another substantive flow came in the form of Vietnamese refugees fleeing the Vietnam War in the 1970s, and today's overall population of Asian Americans vary greatly in origin country, socioeconomic background, and generation in America (Takaki, 1998), this mythos has widely persisted and has become attached to some of the educational competition-based White distaste discussed in this paper.

C Why Estimate in Levels Rather Than in Differences

The most common alternate specifications in the immigration displacement literature involve estimating the relationship between first differences ($Race_{t-(t-1)}$) rather than levels, and including total population as a divisor of the race terms rather than as a regressor.[29]

We choose to use specification (1) rather than these alternatives for two reasons. First, we can interpret regressing $White$ on $Asian$ as identifying the white student response to an increase in the total enrollment stock of Asians, while regressing $White_{t-(t-1)}$ on $Asian_{t-(t-1)}$ identifies the white student response to an increase in the yearly *inflow* of Asians. The former is a more meaningful question for this paper, as we hypothesize that white students respond more to the total number of Asian peers around them in a given school year, rather than the change in Asians from the previous year. For example, in rural districts, going from a yearly inflow of one Asian to ten Asian students (a relatively large change) may not matter to white students if the total number of Asian peers is negligible, while in Los Angeles, yearly Asian inflow might not increase, but high levels of historical Asian enrollment may incentivize white students to leave. The greater ease of interpretation of the levels specification is an additional advantage.

Second, although dividing by lagged population and including it as a regressor are both techniques to control for district size, the former can introduce "division bias" when there is measurement error in the population control. If there is bias in total enrollment, an overstated $White/Total$ share would be associated with an overstated $Asian/Total$ share and

[29] See Peri and Sparber (2011) for an example of a specification using both.

an understated $White/Total$ share would be associated with an understated $Asian/Total$, leading to a spurious positive correlation.

This claim of division bias seems to be supported when we run specification (1) but with $Total_{d,t-1}$ as a divisor of $White_{d,t}$ and $Asian_{d,t}$. Estimates of α_1 are higher and more positive than when the lagged population control is included as a separate term. However, we hesitate to draw a conclusive statement from this result as there is no way to determine the "ground truth" for an underlying structural relationship between White and Asian enrollment.

D "Orphan" Districts

As discussed earlier, elementary (K-8) and unified (K-12) school district boundaries uniquely and fully divide up the state of California. The secondary districts (9-12) spatially cover some but not all of the elementary districts in a many-to-one elementary-to-secondary district mapping. The elementary districts which are not spatially contained within the boundaries of a secondary district feed into neighboring secondary or unified districts (we refer to these as "orphan" districts).

There are 27 "orphan" districts in our dataset. Information on which secondary or unified school districts these elementary districts feed into is not readily available online, so we called each district office to inquire. In most cases students are given an option to attend different districts for secondary school, but there is one primary district that most students choose to attend. For simplicity, we map each "orphan" district to just this primary unified or secondary school district. This manual map is included in Appendix Table G.1.

The idea behind our IV approach is to instrument for actual district attendance with predicted attendance. However, in the case of the "orphan" districts, spatial and enrollment district boundaries no longer match up, as students who reside in one district and attend elementary school there then attend high school in another district. This means that the instrument will underestimate actual attendance for the unified and secondary school districts which these "orphan" districts feed into, as these districts actually also receive an influx of non-resident students for grades 9-12, in addition to their resident attendees.

In order to address this issue, we re-compute $\Delta\widehat{AsianEnr}_{d,t}$ for each school district using enrollment for that district but population from the districts which feed into it. We concretize this point with the following example. Say, elementary school districts E1, E2, and E3 are contained within the boundaries of secondary school district S1 and their students feed into S1 for grades 9-12. Orphan school district E4 enrolls students from grades

K-8 but also feeds into secondary school district S1 for grades 9-12. Orphan school district E5 enrolls students from grades K-8 but then feeds into unified school district U1 for grades 9-12. U1 also enrolls its resident attendees from grades K-12. Appendix Figure G.1 illustrates these boundaries. For simplicity of notation, let $\sum_j Share_{j,d,\tau} \times Flow_{j,t}$ be called $\Delta \widehat{AsianPop}_{d,t}$, which represents the total predicted number of Asian residents in a district in year t. Below, we compute $\Delta \widehat{AsianEnr}_{d,t}$ for several districts to illustrate and discuss. (For further simplicity of notation and without loss of generality, we drop the time index on terms which denote quantities in the base year T.)

$$\Delta \widehat{AsianEnr}_{E1,t} = \frac{AsianEnr_{E1}}{AsianPop_{E1}} \times \Delta \widehat{AsianPop}_{E1,t} \tag{7}$$

$$\Delta \widehat{AsianEnr}_{S1,t} = \frac{AsianEnr_{S1}}{AsianPop_{S1} + AsianPop_{E4}} \times (\Delta \widehat{AsianPop}_{S1,t} + \Delta \widehat{AsianPop}_{E4,t}) \tag{8}$$

$$\begin{aligned} \Delta \widehat{AsianEnr}_{U1,t} = & \frac{AsianEnr_{U1}[\text{K-8}]}{AsianPop_{U1}} \times \Delta \widehat{AsianPop}_{U1,t} \\ & + \frac{AsianEnr_{U1}[\text{9-12}]}{AsianPop_{U1} + AsianPop_{E5}} \times (\Delta \widehat{AsianPop}_{U1,t} + \Delta \widehat{AsianPop}_{E5,t}) \end{aligned} \tag{9}$$

Equation (2) is the simplest case of computing total district enrollment for any elementary school district, or for a secondary or unified school district which does not take in orphan feeder districts. In Equation (3), because $AsianEnr_{S1}$ encompasses 9-12 attendees from both the residents of $S1$ and $E4$, we add $AsianPop_{E4}$ and $\Delta AsianPop_{E4,t}$ to the respective $S1$ terms. In Equation (4), we divide the unified enrollment of $U1$ into a K-8 component, which only comprises the residents of $U1$, and a 9-12 component, which comprises the residents of $U1$ and of $E5$. One important note is that although the district data tabulates enrollment by grade level and also by ethnic group, it does not tabulate by grade level $\times$ ethnic group. Therefore, while we do not have the exact number $AsianEnr_{U1}$[K-8], we can estimate this by taking $AsianEnr_{U1} \times (TotalEnr[\text{K-8}]/TotalEnr[\text{K-12}])$. The end result of this procedure is a dataset of school district predicted inflows which accurately reflect the underlying residence/attendance patterns and still allow the full sample of elementary, secondary, and unified school districts to be used in our analysis.

E Defining Rural/Suburban/Urban Areas

To construct the variables that we will use to define if a school district is in a rural, suburban or urban area, we combine data on public-school enrollment from the California DOE and data on the county composition of U.S. metropolitan areas from IPUMS USA.

We first map each county of California to its corresponding metropolitan area, using the 2000-2011 definition from IPUMS USA (2019). This enables us to build a crosswalk dataset of counties and metropolitan areas in California.

We then combine this crosswalk dataset with the public-school enrollment data from the California DOE, and define our urban status variable as follows:

1. We restrict the sample to the state of California (the IPUMS USA data covers the whole U.S.).
2. Any counties that is in California but not in one of the counties that appear in the IPUMS data is assigned to belong to rural areas.
3. We sort the dataset by county and school district size (based on total enrollment).
4. The largest school district (based on its public-school student population) is assigned to belong to urban areas.
5. The remaining school districts are assigned to belong to suburban areas.

F Summary of the Model's Predictions

The predictions of the model laid out in Section 5 can be summarized as follows:

1. If we observe exactly one white departure for every Asian entrant, then only the housing price mechanism is at work, and white location decisions are racially agnostic.
   - If we further assume that $\partial z/\partial k > 0$, this implies $|\partial U/\partial k| = |(\partial U/\partial z)(\partial z/\partial k)|$. In this case, we can only conclude that the two effects cancel each other out, but cannot distinguish whether they are zero or nonzero (i.e., unable to conclude whether whites exhibit racial distaste or not).
2. If we observe more than one white departure for every Asian entrant, then this implies whites do exhibit racial distaste for Asians.
   - If we further assume that $\partial z/\partial k > 0$, this implies $|\partial U/\partial k| > |(\partial U/\partial z)(\partial z/\partial k)|$; that is, the magnitude of whites' negative racial distaste outweighs the positive preference for the increase in peer quality also conferred by the Asian inflow.
3. If we observe less than one white departure for every Asian entrant, then this implies whites actually exhibit racial attraction for Asians.

- If we further assume that $\partial z/\partial k > 0$, this implies $|\partial U/\partial k| < |(\partial U/\partial z)(\partial z/\partial k)|$; that is, the magnitude of whites' positive preference for the increase in peer quality outweighs their racial distaste (if any exists; we cannot conclude that $\partial U/\partial k$ is nonzero in this case).

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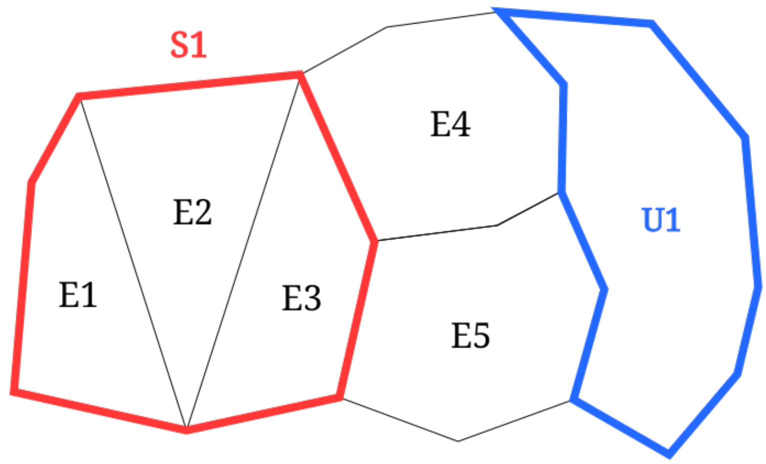
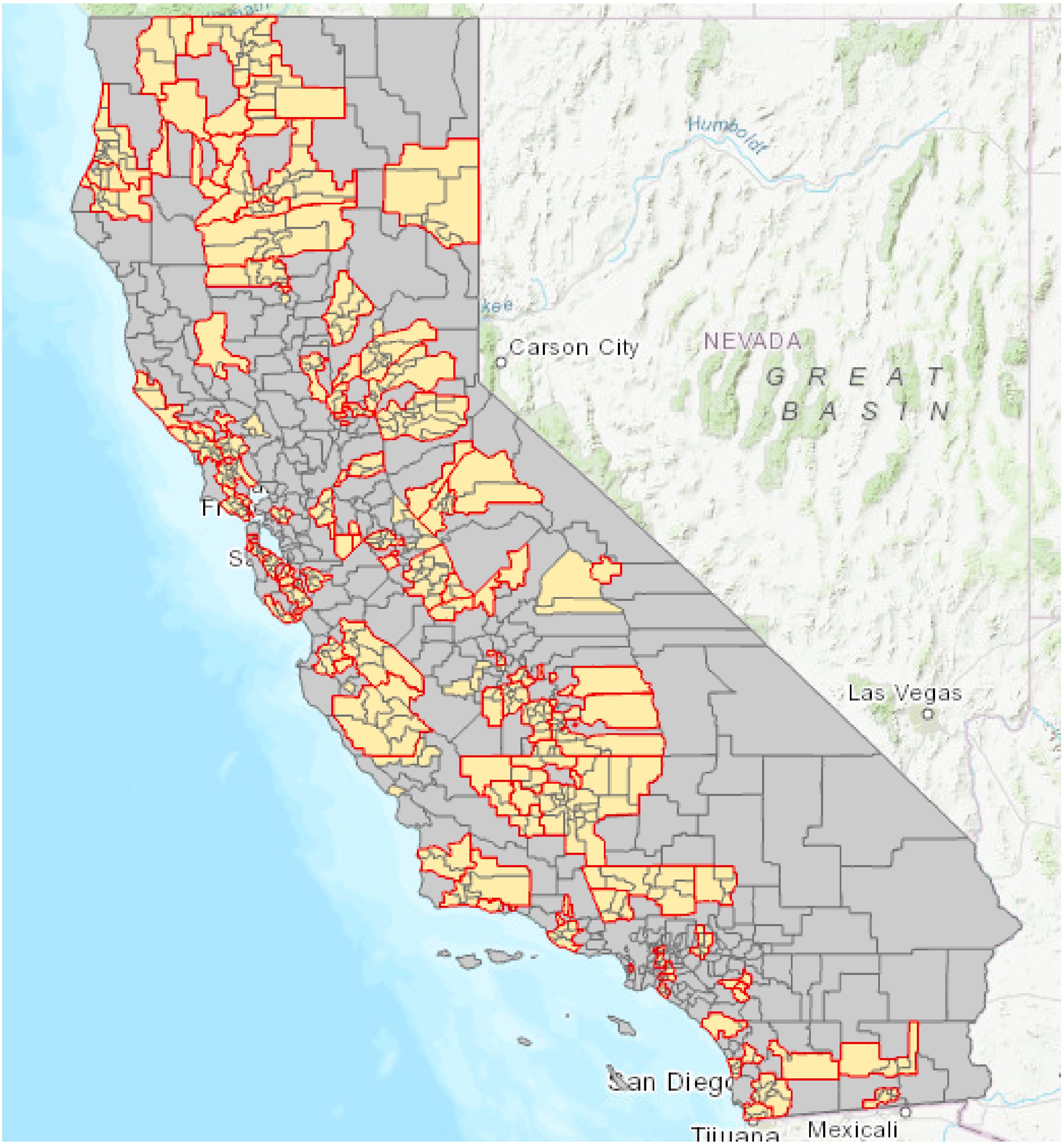
G Online Appendix

Online Appendix Figure G.1: District boundaries example



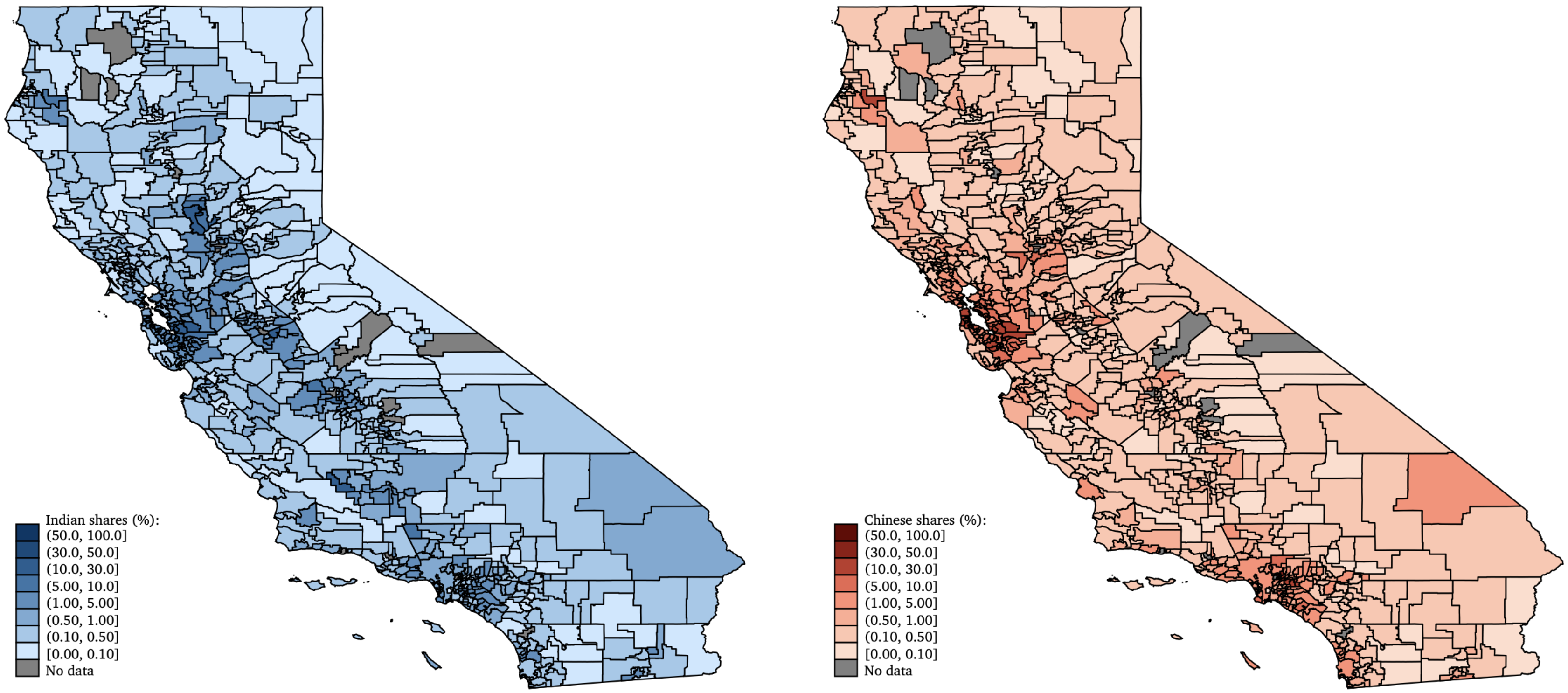
Online Appendix Figure G.2: California school district boundaries (2017)



Notes: Unified school districts in gray, elementary school districts in yellow, and secondary school districts in red borders.

Online Appendix Figure G.3: Bartik-style shares of Indian and Chinese people in California as of 2000

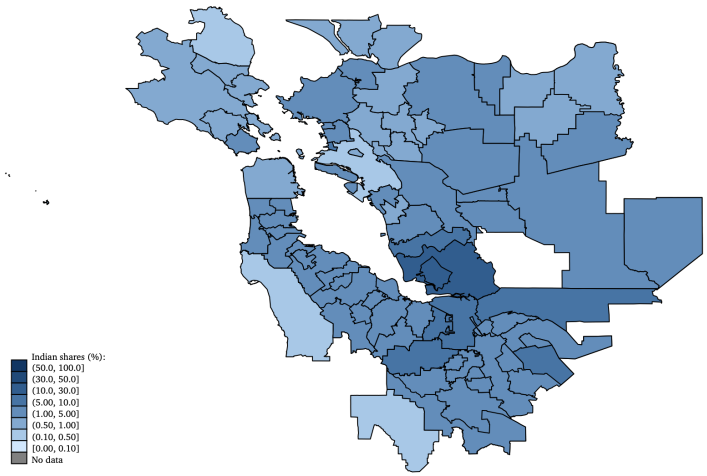
(a) Indian (b) Chinese



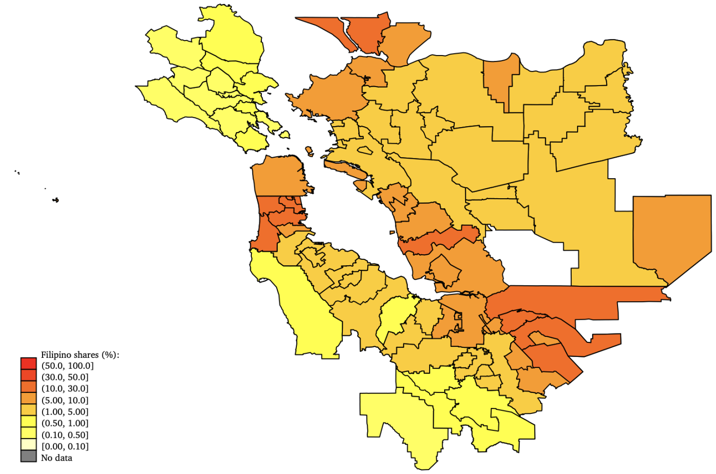
Notes: Bartik-style share = Indian/Chinese population in a school district divided by the school district total population, then multiplied by 100.

Online Appendix Figure G.4: Bartik-style shares of Indian/Chinese/Filipino/Vietnamese people in the Bay area as of 2000

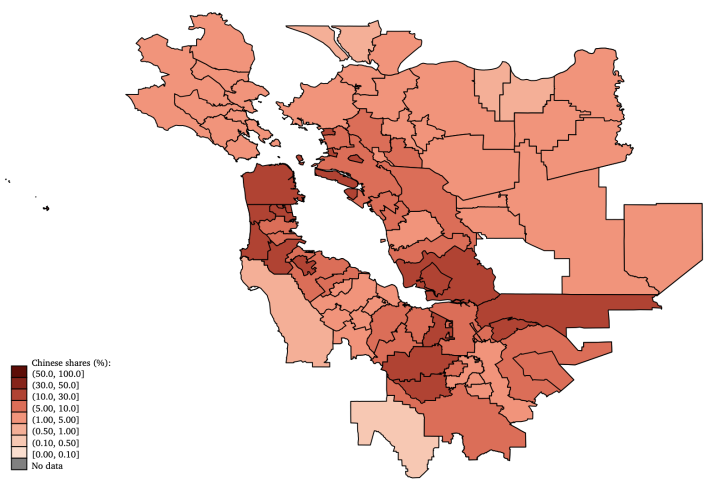
(a) Indian



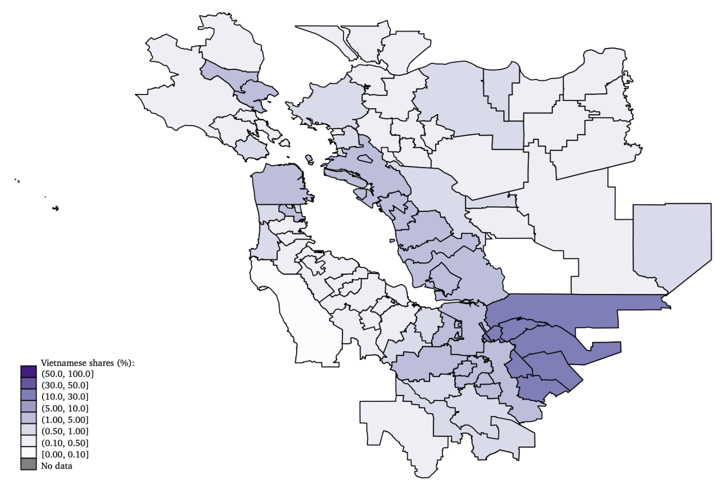
(c) Filipino



(b) Chinese



(d) Vietnamese



Notes: Bartik-style share = Indian/Chinese/Filipino/Vietnamese population in a school district divided by the school district total population, then multiplied by 100.

Online Appendix Table G.1: “Orphan districts” mapping

Elementary District	Secondary or Unified District
Mission Union Elementary	Soledad Unified
Cayucos Elementary	Central Union High
San Miguel Joint Union Elementary	Paso Robles Joint Union High
Pleasant Valley Joint Union Elementary	Paso Robles Joint Union High
Westside Union Elementary	Riverdale Joint Union High
Burrel Union Elementary	Riverdale Joint Union High
Raisin City Elementary	Caruthers Union High
Alvina Elementary	Caruthers Union High
Monroe Elementary	Caruthers Union High
Pine Ridge Elementary	Sierra Joint Union High
Big Creek Elementary	Sierra Joint Union High
Gratton Elementary	Hughson Union High
Hickman Community Charter	Hughson Union High
Roberts Ferry Union Elementary	Waterford Unified
Knights Ferry Elementary	Oakdale Joint Union High
Valley Home Joint Elementary	Oakdale Joint Union High
Howell Mountain Elementary	Saint Helena Unified
Pope Valley Union Elementary	Saint Helena Unified
Manzanita Elementary	Gridley Union High
Camptonville Elementary	Nevada Joint Union High
Plaza Elementary	Orland Joint Union High
Lake Elementary	Orland Joint Union High
Kneeland Elementary	Eureka City High
Garfield Elementary	San Leandro Unified
Freshwater Elementary	Eureka City High
Cutten Elementary	Eureka City High
South Bay Union Elementary	Sweetwater Union High
Hermosa Beach City Elementary	Manhattan Beach Unified

Notes: Mappings obtained in some cases by browsing school district websites; in most cases, by calling each school district and asking administrators. Elementary districts feed to multiple districts for secondary school, but for simplicity, we map to the district which administrators say most students end up attending.

Online Appendix Table G.2: Asian enrollment and white departures (2001-2016)
Inflows data from CPS

Sample:	Rural			Suburban			Urban		
Specification:	OLS	1st stage	IV	OLS	1st stage	IV	OLS	1st stage	IV
Dependent variable:	White	Asian	White	White	Asian	White	White	Asian	White
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Asian	0.687		12.17	-0.433***		-2.389***	0.502**		0.228
	(0.498)		(11.00)	(0.0790)		(0.617)	(0.218)		(0.368)
$\widehat{\text{AsianPred}}$		-0.432			0.618***			-1.164***	
		(0.363)			(0.171)			(0.161)	
Total_{t-1}	0.560***	0.00774**	0.434***	0.163***	0.182***	0.508***	0.0314	0.0697***	0.0777
	(0.0639)	(0.00352)	(0.116)	(0.0318)	(0.0239)	(0.113)	(0.0805)	(0.0184)	(0.0863)
Observations	1,999	1,999	1,999	9,578	9,578	9,578	432	432	432
F-stat on excl. IV	–	1.37	–	–	12.89	–	–	47.24	–

Notes: This table is the equivalent of Table 1 but the inflows data used to construct the instrument come from the Current Population Survey. It displays the OLS and 2SLS (including the first-stage) regressions of the number of White students ("White") on the number of Asian students ("Asian"), controlling for the total number of students in the previous year ("Total_{t-1}"), for each urban status sample. All specifications include year fixed effects and district fixed effects. The unit of observation is a school district $\times$ year. District IV sample used (only the districts for which the instrument is available; Los Angeles Unified and San Francisco Unified Districts dropped) for the 2001-2016 period. The instrument ($\widehat{AsianPred}$) uses 2000 as base year. Spatial HAC (a.k.a. Conley) standard errors reported in parentheses – these standard errors are adjusted for spatial and temporal correlation within 1,000 km and 10 decades. Significance levels: * 10%, ** 5%, *** 1%.

Online Appendix Table G.3: Asian enrollment and white departures
Suburban areas – By socio-economic status
Inflows data from CPS

Dependent variable:	White							
Specification:	OLS				IV			
Sample:	Non-missing 2000 school district SES index	Top third 2000 school district SES index	Middle third 2000 school district SES index	Bottom third 2000 school district SES index	Non-missing 2000 school district SES index	Top third 2000 school district SES index	Middle third 2000 school district SES index	Bottom third 2000 school district SES index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Asian	-0.433***	-0.652***	-1.112***	0.881***	-2.389***	-1.244***	-2.943***	1.691***
	(0.0790)	(0.0858)	(0.199)	(0.185)	(0.617)	(0.236)	(0.579)	(0.312)
Total_{t-1}	0.163***	0.281***	0.314***	-0.00540	0.508***	0.455***	0.649***	-0.0825**
	(0.0318)	(0.0783)	(0.0614)	(0.0356)	(0.113)	(0.107)	(0.126)	(0.0361)
Observations	9,578	3,343	3,214	3,021	9,578	3,343	3,214	3,021
First-stage F-stat	–	–	–	–	12.89	65.79	28.88	41.13
Dep. var. mean	2,167	2,803	2,577	1,026	2,167	2,803	2,577	1,026

Notes: This table is the equivalent of Table 5 but the inflows data used to construct the instrument come from the Current Population Survey. The 2000 school district index encompasses school quality and the percent of students eligible to free or reduced-price meals as of 2000. All specifications include year fixed effects and district fixed effects. The unit of observation is a school district $\times$ year. Sample restricted to suburban areas only and district IV sample (i.e., only the districts for which the instrument is available; Los Angeles Unified and San Francisco Unified Districts dropped) for the 2001-2016 period. The instrument ($\widehat{AsianPred}$) uses 2000 as base year. Spatial HAC (a.k.a. Conley) standard errors reported in parentheses – these standard errors are adjusted for spatial and temporal correlation within 1,000 km and 10 decades. Significance levels: * 10%, ** 5%, *** 1%.

Online Appendix Table G.4: Asian enrollment and white departures,
Suburban areas – By average pre-2000 district enrollment growth
Inflows data from CPS

Dependent variable:	White					
Specification:	OLS			IV		
Sample:	Non-missing average pre-2000 growth	Average pre-2000 growing	Average pre-2000 shrinking	Non-missing average pre-2000 growth	Average pre-2000 growing	Average pre-2000 shrinking
	(1)	(2)	(3)	(4)	(5)	(6)
Asian	-0.433***	-0.428***	-0.947***	-2.390***	-2.396***	-2.441***
	(0.0790)	(0.0797)	(0.137)	(0.617)	(0.642)	(0.605)
Total$_{t-1}$	0.163***	0.162***	0.433***	0.508***	0.508***	0.884***
	(0.0318)	(0.0317)	(0.0928)	(0.113)	(0.117)	(0.150)
Observations	9,562	8,860	702	9,562	8,860	702
First-stage F-stat	–	–	–	12.90	12.14	8.93
Dep. var. mean	2,167	2,232	1,348	2,167	2,232	1,348

Notes: This table is the equivalent of Table 2 but the inflows data used to construct the instrument come from the Current Population Survey. Growing (shrinking) districts are those with a non-negative (negative) average annual growth rate over the 1981-2016 period. All specifications include year fixed effects and district fixed effects. The unit of observation is a school district × year. Sample restricted to suburban areas only and district IV sample (i.e., only the districts for which the instrument is available; Los Angeles Unified and San Francisco Unified Districts dropped) for the 2001-2016 period. The instrument ($\widehat{AsianPred}$) uses 2000 as base year. Spatial HAC (a.k.a. Conley) standard errors reported in parentheses – these standard errors are adjusted for spatial and temporal correlation within 1,000 km and 10 decades. Significance levels: * 10%, ** 5%, *** 1%.

Online Appendix Table G.5: Asian enrollment and white departures, Suburban areas – By the presence of private schools Inflows data from CPS

Dependent variable:	White			
Specification:	OLS		IV	
Sample:	No private schools	At least 1 private school	No private schools	At least 1 private school
	(1)	(2)	(3)	(4)
Asian	0.677**	-0.373***	5.732	-2.019***
	(0.341)	(0.0754)	(5.407)	(0.524)
Total_{t-1}	0.160***	0.152***	-0.117	0.454***
	(0.0471)	(0.0315)	(0.301)	(0.101)
Observations	3,278	6,300	3,278	6,300
F-stat on excl. IV	–	–	1.52	12.25
Dep. var. mean	519	3,024	519	3,024

Notes: This table is the equivalent of Table 3 but the inflows data used to construct the instrument come from the Current Population Survey. All specifications include year fixed effects and district fixed effects. The unit of observation is a school district $\times$ year. District IV sample used (only the districts for which the instrument is available; Los Angeles Unified and San Francisco Unified Districts dropped) for the 2001-2016 period. The instrument ($\widehat{AsianPred}$) uses 2000 as base year. The inflows data used to construct the instrument come from the Current Population Survey. Spatial HAC (a.k.a. Conley) standard errors reported in parentheses – these standard errors are adjusted for spatial and temporal correlation within 1,000 km and 10 decades. Significance levels: * 10%, ** 5%, *** 1%.

Online Appendix Table G.6: Asian share and school quality
Suburban areas – By 2000 school districts' SES index
Inflows data from CPS

Dependent variable:	API score (school quality)							
Specification:	OLS				IV			
Sample:	Non-missing 2000 school district SES index	Top third 2000 school district SES index	Middle third 2000 school district SES index	Bottom third 2000 school district SES index	Non-missing 2000 school district SES index	Top third 2000 school district SES index	Middle third 2000 school district SES index	Bottom third 2000 school district SES index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Asian share	-105.3***	60.17**	21.38	-4.883	-34.48	167.4***	382.2	1359.3*
	(34.38)	(28.41)	(41.00)	(38.45)	(98.83)	(55.22)	(265.2)	(744.5)
Total_{t-1} ($\div$ 1000)	0.256	0.178	1.812***	0.398	0.0483	-0.502	0.650	-0.619
	(0.489)	(0.755)	(0.697)	(0.665)	(0.586)	(0.862)	(1.121)	(1.027)
Observations	7,152	2,487	2,401	2,264	7,152	2,487	2,401	2,264
First-stage F-stat	–	–	–	–	26.22	89.57	30.97	3.39
Dep. var. mean	755.1	836.5	742.4	679.0	755.1	836.5	742.4	679.0

Notes: This table is the equivalent of Table 4 but the inflows data used to construct the instrument come from the Current Population Survey. API stands for Academic Performance Index and ranges from 200 to 1000; it serves as a proxy for initial (i.e., 2000) school quality. All specifications include year fixed effects and district fixed effects. The unit of observation is a school district $\times$ year. Sample restricted to suburban areas only and district IV sample (i.e., only the districts for which the instrument is available; Los Angeles Unified and San Francisco Unified Districts dropped) for the 2001-2016 period. The instrument ($\widehat{AsianPred}$) uses 2000 as base year. Spatial HAC (a.k.a. Conley) standard errors reported in parentheses – these standard errors are adjusted for spatial and temporal correlation within 1,000 km and 10 decades. Significance levels: * 10%, ** 5%, *** 1%.

Online Appendix Table G.7: Asian enrollment and white departures (2001-2016)
Full sample – Inflows data from CPS

Specification:	OLS	1st stage	IV
Dependent variable:	White (1)	Asian (2)	White (3)
Asian	-0.298***		-4.464*
	(0.0977)		(2.376)
$\widehat{\text{AsianPred}}$		0.324*	
		(0.171)	
Total_{t-1}	0.146***	0.181***	0.880**
	(0.0317)	(0.0237)	(0.422)
Observations	12,009	12,009	12,009
F-stat on excl. IV	–	3.54	–

Notes: This table is the equivalent of Table A.1 but the inflows data used to construct the instrument come from the Current Population Survey. It displays the OLS and 2SLS (including the first-stage) regressions of the number of White students ("White") on the number of Asian students ("Asian"), controlling for the total number of students in the previous year ("Total_{t-1}"). All specifications include year fixed effects and district fixed effects. The unit of observation is a school district $\times$ year. District IV sample used (only the districts for which the instrument is available; Los Angeles Unified and San Francisco Unified Districts dropped) for the 2001-2016 period. The instrument ($\widehat{AsianPred}$) uses 2000 as base year. Spatial HAC (a.k.a. Conley) standard errors reported in parentheses – these standard errors are adjusted for spatial and temporal correlation within 1,000 km and 10 decades. Significance levels: * 10%, ** 5%, *** 1%.

Online Appendix Table G.8: Asian enrollment and white departures (2001-2016)
Inflows data from OECD & Paper Immigration Book

Sample:	Rural			Suburban			Urban		
Specification:	OLS	1st stage	IV	OLS	1st stage	IV	OLS	1st stage	IV
Dependent variable:	White (1)	Asian (2)	White (3)	White (4)	Asian (5)	White (6)	White (7)	Asian (8)	White (9)
Asian	0.687 (0.498)		11.53 (8.951)	-0.433*** (0.0790)		-2.477*** (0.707)	0.502** (0.218)		0.135 (0.416)
$\widehat{\text{AsianPred}}$		-0.331 (0.235)			0.469*** (0.135)			-0.805*** (0.123)	
Total_{t-1}	0.560*** (0.0639)	0.00726** (0.00364)	0.441*** (0.100)	0.163*** (0.0318)	0.184*** (0.0241)	0.524*** (0.127)	0.0314 (0.0805)	0.0691*** (0.0180)	0.0933 (0.0895)
Observations	1,999	1,999	1,999	9,578	9,578	9,578	432	432	432
F-stat on excl. IV	–	1.92	–	–	11.96	–	–	38.69	–

Notes: This table is the equivalent of Table 1 but the inflows data used to construct the instrument come from the OECD & Paper Immigration Book. It displays the OLS and 2SLS (including the first-stage) regressions of the number of White students ("White") on the number of Asian students ("Asian"), controlling for the total number of students in the previous year ("Total_{t-1}"), for each urban status sample. All specifications include year fixed effects and district fixed effects. The unit of observation is a school district × year. District IV sample used (only the districts for which the instrument is available; Los Angeles Unified and San Francisco Unified Districts dropped) for the 2001-2016 period. The instrument ($\widehat{AsianPred}$) uses 2000 as base year. Spatial HAC (a.k.a. Conley) standard errors reported in parentheses – these standard errors are adjusted for spatial and temporal correlation within 1,000 km and 10 decades. Significance levels: * 10%, ** 5%, *** 1%.

Online Appendix Table G.9: Asian enrollment and white departures, suburban areas by socio-economic status
Inflows data from OECD & Paper Immigration Book

Dependent variable:	White							
Specification:	OLS				IV			
Sample:	Non-missing 2000 school district SES index	Top third 2000 school district SES index	Middle third 2000 school district SES index	Bottom third 2000 school district SES index	Non-missing 2000 school district SES index	Top third 2000 school district SES index	Middle third 2000 school district SES index	Bottom third 2000 school district SES index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Asian	-0.433***	-0.652***	-1.112***	0.881***	-2.477***	-1.254***	-3.349***	1.641***
	(0.0790)	(0.0858)	(0.199)	(0.185)	(0.707)	(0.233)	(0.713)	(0.281)
Total_{t-1}	0.163***	0.281***	0.314***	-0.00540	0.524***	0.458***	0.723***	-0.0777**
	(0.0318)	(0.0783)	(0.0614)	(0.0356)	(0.127)	(0.106)	(0.146)	(0.0347)
Observations	9,578	3,343	3,214	3,021	9,578	3,343	3,214	3,021
First-stage F-stat	–	–	–	–	11.96	51.43	16.63	59.57
Dep. var. mean	2,167	2,803	2,577	1,026	2,167	2,803	2,577	1,026

Notes: This table is the equivalent of Table 5 but the inflows data used to construct the instrument come from the OECD & Paper Immigration Book. The 2000 school district index encompasses school quality and the percent of students eligible to free or reduced-price meals as of 2000. All specifications include year fixed effects and district fixed effects. The unit of observation is a school district $\times$ year. Sample restricted to suburban areas only and district IV sample (i.e., only the districts for which the instrument is available; Los Angeles Unified and San Francisco Unified Districts dropped) for the 2001-2016 period. The instrument ($\widehat{AsianPred}$) uses 2000 as base year. Spatial HAC (a.k.a. Conley) standard errors reported in parentheses – these standard errors are adjusted for spatial and temporal correlation within 1,000 km and 10 decades. Significance levels: * 10%, ** 5%, *** 1%.

Online Appendix Table G.10: Asian enrollment and white departures, suburban areas by average pre-2000 district enrollment growth
Inflows data from OECD & Paper Immigration Book

Dependent variable:	White					
Specification:	OLS			IV		
Sample:	Non-missing average pre-2000 growth	Average pre-2000 growing	Average pre-2000 shrinking	Non-missing average pre-2000 growth	Average pre-2000 growing	Average pre-2000 shrinking
	(1)	(2)	(3)	(4)	(5)	(6)
Asian	-0.433***	-0.428***	-0.947***	-2.478***	-2.491***	-2.275***
	(0.0790)	(0.0797)	(0.137)	(0.707)	(0.739)	(0.587)
Total$_{t-1}$	0.163***	0.162***	0.433***	0.524***	0.525***	0.834***
	(0.0318)	(0.0317)	(0.0928)	(0.127)	(0.131)	(0.150)
Observations	9,562	8,860	702	9,562	8,860	702
First-stage F-stat	–	–	–	11.97	11.14	10.03
Dep. var. mean	2,167	2,232	1,348	2,167	2,232	1,348

Notes: This table is the equivalent of Table 2 but the inflows data used to construct the instrument come from the OECD & Paper Immigration Book. Growing (shrinking) districts are those with a non-negative (negative) average annual growth rate over the 1981-2016 period. All specifications include year fixed effects and district fixed effects. The unit of observation is a school district $\times$ year. Sample restricted to suburban areas only and district IV sample (i.e., only the districts for which the instrument is available; Los Angeles Unified and San Francisco Unified Districts dropped) for the 2001-2016 period. The instrument ($\widehat{AsianPred}$) uses 2000 as base year. Spatial HAC (a.k.a. Conley) standard errors reported in parentheses – these standard errors are adjusted for spatial and temporal correlation within 1,000 km and 10 decades. Significance levels: * 10%, ** 5%, *** 1%.

Online Appendix Table G.11: Asian enrollment and white departures,
Suburban areas – By the presence of private schools
Inflows data from OECD & Paper Immigration Book

Dependent variable:	White			
Specification:	OLS		IV	
Sample:	No private schools (1)	At least 1 private school (2)	No private schools (3)	At least 1 private school (4)
Asian	0.677**	-0.373***	3.978	-2.088***
	(0.341)	(0.0754)	(4.108)	(0.604)
Total_{t-1}	0.160***	0.152***	-0.0207	0.467***
	(0.0471)	(0.0315)	(0.225)	(0.114)
Observations	3,278	6,300	3,278	6,300
F-stat on excl. IV	–	–	1.29	11.19
Dep. var. mean	519	3,024	519	3,024

Notes: This table is the equivalent of Table 3 but the inflows data used to construct the instrument come from the OECD & Paper Immigration Book. All specifications include year fixed effects and district fixed effects. The unit of observation is a school district × year. District IV sample used (only the districts for which the instrument is available; Los Angeles Unified and San Francisco Unified Districts dropped) for the 2001-2016 period. The instrument ($\widehat{AsianPred}$) uses 2000 as base year. The inflows data used to construct the instrument come from the OECD & Paper Immigration Book. Spatial HAC (a.k.a. Conley) standard errors reported in parentheses – these standard errors are adjusted for spatial and temporal correlation within 1,000 km and 10 decades. Significance levels: * 10%, ** 5%, *** 1%.

Online Appendix Table G.12: Asian share and school quality, suburban areas by 2000 school districts' peer quality
Inflows data from OECD & Paper Immigration Book

Dependent variable:	API score (school quality)							
Specification:	OLS				IV			
Sample:	Non-missing 2000 API score	Top third 2000 API	Middle third 2000 API	Bottom third 2000 API	Non-missing 2000 API score	Top third 2000 API	Middle third 2000 API	Bottom third 2000 API
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Asian share	-112.0***	46.48	8.926	77.92	-157.2*	167.6**	294.6	4760.7
	(36.20)	(29.86)	(28.22)	(115.8)	(93.10)	(65.13)	(385.8)	(5167.6)
Total$_{t-1}$ ($\div$ 1000)	0.268	0.504	1.287**	-0.229	0.401	-0.255	0.342	-4.445
	(0.489)	(0.748)	(0.633)	(0.807)	(0.583)	(0.857)	(1.382)	(4.554)
Observations	7,117	2,473	2,380	2,264	7,117	2,473	2,380	2,264
First-stage F-stat	–	–	–	–	32.67	99.66	4.15	0.79
Dep. var. mean	755.3	836.6	747.8	674.5	755.3	836.6	747.8	674.5

Notes: This table is the equivalent of Table 4 but the inflows data used to construct the instrument come from the OECD & Paper Immigration Book. API stands for Academic Performance Index and ranges from 200 to 1000; it serves as a proxy for initial (i.e., 2000) school quality. All specifications include year fixed effects and district fixed effects. The unit of observation is a school district $\times$ year. Sample restricted to suburban areas only and district IV sample (i.e., only the districts for which the instrument is available; Los Angeles Unified and San Francisco Unified Districts dropped) for the 2001-2016 period. The instrument ($\widehat{AsianPred}$) uses 2000 as base year. Spatial HAC (a.k.a. Conley) standard errors reported in parentheses – these standard errors are adjusted for spatial and temporal correlation within 1,000 km and 10 decades. Significance levels: * 10%, ** 5%, *** 1%.

Online Appendix Table G.13: Asian enrollment and white departures (2001-2016)
Full sample – Inflows data from OECD & Paper Immigration Book

Specification:	OLS	1st stage	IV
Dependent variable:	White (1)	Asian (2)	White (3)
Asian	-0.297***		-5.164
	(0.106)		(3.353)
$\widehat{\text{AsianPred}}$		0.209	
		(0.135)	
Total_{t-1}	0.138***	0.152***	0.853*
	(0.0302)	(0.0218)	(0.492)
Observations	11,961	11,961	11,961
F-stat on excl. IV	–	2.38	–

Notes: This table is the equivalent of Table A.1 but the inflows data used to construct the instrument come from the OECD & Paper Immigration Book. It displays the OLS and 2SLS (including the first-stage) regressions of the number of White students ("White") on the number of Asian students ("Asian"), controlling for the total number of students in the previous year ("Total_{t-1}"). All specifications include year fixed effects and district fixed effects. The unit of observation is a school district $\times$ year. District IV sample used (only the districts for which the instrument is available; Los Angeles Unified and San Francisco Unified Districts dropped) for the 2001-2016 period. The instrument ($\widehat{AsianPred}$) uses 2000 as base year. Spatial HAC (a.k.a. Conley) standard errors reported in parentheses – these standard errors are adjusted for spatial and temporal correlation within 1,000 km and 10 decades. Significance levels: * 10%, ** 5%, *** 1%.