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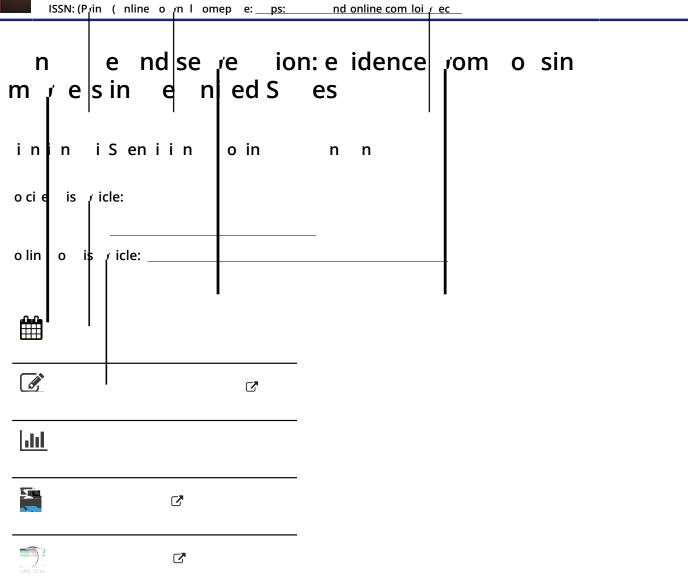
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Language and segregation: evidence from housing markets in the United States

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ABSTRACT

It has been suggested that residential segregation has negative social and economic impacts. However, psychological and cultural benefits of such clustering have been established by research. We undertake a comprehensive analysis by estimating residential choices of minorities and identifying their willingness to pay for housing attributes and community characteristics. Recognizing that the language spoken at home adds to daily convenience, a sense of belonging, and a feeling of closeness, we widen the scope of the study to include four minority groups, defined by the languages spoken at home. We find that preferences for integrating into white, English-speaking societies are quite heterogeneous. The willingness to pay to live in a community with more own language speakers is inversely associated with the willingness to pay to live in a community with more English-speaking whites. Furthermore, any two minority groups share the same reciprocal attitudes towards each other. To assimilate more into the mainstream, a minority group might choose to reside in a community with fewer people who speak their language, but they would not necessarily be willing to lower the percentage of other minority groups.

1. Introduction

Individuals may be segregated by ethnicity, income, occupation or preference for local public goods such as access to public transit (Gradín 2020; Moulin, Flacher, and Harari-Kermadec 2016; Alonso-Villar, Gradin, and Del Río 2013; Conejeros and Vargas 2012). Residential segregation is a key dimension for measuring the pattern of segregation. It is commonly observed and extensively studied in several countries with large-scale immigration (Bayer, McMillan, and Rueben 2004a; Bayer, Ferreira, and McMillan 2007; Bayer and McMillan 2012; Kuminoff, Smith, and Timmins 2013).

Residential segregation can cause adverse social and economic effects. Living in highly segregated areas limits job opportunities and access to high-quality local public goods, as well as the means for sharing the spillover benefits from more skilled workers (Kain 1968; Borjas 1995; Wilson 2012). In addition to the direct social and economic effects, people have developed a distaste for segregation as it contradicts the ideology of a free and equal society (Zhang and Zheng 2015). Thus, the experience in the United States of 'ghettoization' symbolizes persistent Black minority segregation as a failure of efforts towards social and economic integration and equality of opportunity in housing and employment (Bolt, Phillips, and Kempen 2010).

In addition to the negative impacts, the psychological and cultural benefits of ethnic clustering have been well documented (Peach 1996; Phillips 2007); however, it is rarely measured by researchers due to the difficulty of doing so. Extended social relations, cultural support, the feeling of belonging, and community infrastructure oriented towards ethnic goods and services may result in a sense of well-being and security (Phillips, Davis, and Ratcliffe 2007). Gilroy (2013) shows that because of the feelings of community and belonging, the 'ghetto' serves as a place for possible resistance rather than feelings of victimization and exclusion. In the United Kingdom in recent years, minority ethnic groups have increasingly chosen 'self-segregation' and withdrawal from British society to live 'parallel lives' (Phillips 2006).

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A comprehensive welfare analysis of residential segregation must take both the positive and negative effects into account. This paper contributes to the literature by estimating the willingness of minorities to pay for segregation, thereby capturing the overall effects. Households derive utility from housing attributes and community characteristics. Neighbourhoods vary in future opportunities and levels of segregation. All else equal, households face a trade-off when choosing where to live. If a household is willing to give up cultural and social support to live in a less segregated community, then segregation must be undesirable; otherwise, if the opposite is true, segregation must be a preferred attribute.

This study differs from others in two distinct aspects. First, it is one of the few studies to single out the role of the language spoken at home in shaping the landscape of residential segregation. Minorities may be forced to speak English at work; however, they may prefer speaking their mother languages at home or in the community. Speaking the same language helps to provide daily convenience, a sense of belonging, and a feeling of closeness. Such commonness intensifies the positive side of residential segregation and enhances the likelihood of clustering. Previous studies (Massey and Denton 1987, 1989; Bayer, McMillan, and Rueben 2004b; Wong 2013) have stressed the effects of race. Without denying the importance of race, we consider it as a broader and more multidimensional concept compared with the language spoken at home. Depending on their origin, people who identify as a single race might speak multiple languages and accommodate a wider range of diversity compared with a single mother language group. They may vary considerably in habits, customs, religions, or even values, all of which are reflected in their residential choices. Furthermore, some racial minorities, mainly the second or third generation of immigrants, speak only English and they differ in many ways from the first generation of immigrants. These two scenarios call for a re-investigation of residential choices using a different grouping method. Therefore, we focus on spoken language in this study.

The second major feature of our paper is the way we measure segregation. We make a distinction between two types of segregation: spatial segregation (or residential segregation) and preference segregation. A group may be physically segregated if they don't reside near English-speaking white community (mainstream). Still, they are not necessarily be 'preference-segregated' unless they were willing to pay more to live with the group speaking the same language. It's worth noting that spatial segregation is an optimal choice made by households, jointly determined by preference separation (more of preference) and other constraints such as financial constraints. Likewise, the same distinction applies to the integration. Most the previous studies have relied on the dissimilarity index to measure segregation (Massey and Denton 1987, 1989; Yalonetzky 2012; Allen et al. 2015), which is the spatial segregation that has been defined. Moreover, without adjusting for variations in the diversity of population distributions, this type of measurement often provides an average composition of the local environment (Reardon and O'Sullivan 2004). Instead of using the dissimilarity index to measure spatial segregation, we focus more on preference segregation.[1] We utilize a structural estimation and infer the degree of segregation from the willingness to pay for a higher penetration rate of different language speakers. Compared to the dissimilarity index, the preference segregation is an indirect approach; however, it reveals minority groups' subjective feelings about segregation more accurately.

We apply the hedonic model to estimate each minority language group's willingness to pay for housing attributes and community characteristics
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The methodology here is closely related to that of Bajari and Benkard (2005), who develop a semi-parametric hedonic method to estimate households' heterogeneous housing demand, thereby allowing preferences to be a flexible function of observed demographics and idiosyncratic taste shocks for housing characteristics. Furthermore, to meet our research objectives, we extend the methodology to more than two minority groups.

In this study, the minority groups of focus include Hispanics (Spanish speakers), Chinese (Chinese speakers), Indians (Hindi and related language speakers), and English-speaking groups.[2] Albeit drawing much less academic attention, these minorities represent an increasingly high percentage of the US population. The patterns of social and spatial incorporation are likely to be di erentiated over time and vary among places (Phillips 2007; De la Roca, Ellen, and O'Regan 2014). It would be worth investigating whether the pattern of segregation and attribution of these minority groups are systematically di erent from each other. The flexibility of the estimation strategy facilities the study of minority groups' segregation from or integration into the mainstream (English-speaking white communities) and preferences towards each other. To the best of our knowledge, this is the first paper to study the current status of minority (other than Black) integration by analysing individuals' residential choices.

In line with Bajari and Kahn (2005), for the purpose of direct comparison, we sample the same three representative metropolitan cities: Chicago, Dallas, and Atlanta. Except for Chinese speakers, we find strong evidence in favour of urbanization among the minority groups, in the sense that they neither value more rooms or single detached houses, nor do they care much about housing ownership or the age of buildings. The demand for higher-educated peers varies across cities and groups. Compared with previous literature, we contribute to the existing segregation literature on other minority groups. Furthermore, we estimate the willingness to pay for a higher penetration rate of own or other language speakers, which sheds light on the segregation situation for each minority group. Based on the willingness to pay for a higher percentage of English-speaking white group, Chicago is the least integrated city and Dallas is at the other extreme, consistent with previous studies. In addition, we find that for each minority language group, the willingness to pay for more own language speakers and the willingness to pay for more English-speaking white are largely negatively correlated. Any two minority groups share the same reciprocal attitudes towards each other. A corollary inference can be made based on the patterns discovered. To integrate more into the mainstream by increasing the share of English-speaking white, a minority group would choose to have fewer own language speakers, but may not necessarily be willing to lower the percentage of other minority groups. To be away from the mainstream, a minority group would like to substitute with more own language speakers.

The rest of the paper is organized as follows. Section II introduces the hedonic model to estimate households' willingness to pay. Section III presents the data and the baseline model. Section IV estimates the willingness to pay for housing attributes and community characteristics and the demand for integration and segregation. Section V provides further discussion, and section VI concludes.

II. Met odo ogy

Basic model

We first introduce the basic model and estimation methodology. Following Bajari and Kahn (2005), we assume that a residence is composed of three sets of attributes: physical attributes, community attributes, and attributes only observed by households. Let $i = 1, 2, \ldots, I$ denote households and $j = 1, 2, \ldots, J$ denote housing units. The physical attributes include the number of rooms ($Rooms_j$), the age of the residence ($Builtage_j$, years), single detached or not ($Single_j$), and the property ownership

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[2]Ideally, it would be desirable to have English speakers as one group in the study. However, the issue is that there is a vast discrepancy inside the English-speaking group. Even if we proceeded by treating English speakers as a single group, the estimated willingness to pay for is difficult to interpret.

(Own_j, $1 = own$, $0 = rent$). The community attributes include the percentage of college educated households in the community ($mCollege_j$), and the percentages of minority language speakers ($mSpanish_j$, $mHindi_j$, $mChinese_j$). Moreover, we assume the prior percentage of English speakers. Considering the profound heterogeneity between the white and English-speaking non-white groups, we assume the percentage of English-speaking white ($mEnglishwhite_j$) and the percentage of English-speaking non-white groups ($mEnglishnonwhite_j$) simultaneously. Let ξ_j denote the unobserved attribute of housing unit j, and c is the consumption of a composite commodity. We assume that household i aims to maximize the following utility function:

$$
\begin{aligned}
u_{i,j} = {} & \beta_{i,1} log(Rooms_j) + \beta_{i,2} log(Builtage_j) \\
& + \beta_{i,3} Single_j + \beta_{i,4} Own_j + \beta_{i,5} log(mSpanish_j) \\
& + \beta_{i,6} log(mHindi_j) + \beta_{i,7} log(mChinese_j) \\
& + \beta_{i,8} log(mEnglishwhite_j) \\
& + \beta_{i,9} log(mEnglishnonwhite_j) \\
& + \beta_{i,10} log(mCollege_j) + \beta_{i,11} log(\xi_j) + c.
\end{aligned}
$$

(1)

To recover individual-specific taste coefficients, we further specify an linear model of household demographics in Equation (2), shown as followed:

$$
\beta_{i,k} = \beta_{0,k} + \sum_s \beta_{k,s} d_{i,s} + \mu_{i,k},
$$

(2)

where $k = 1, 2, 5, \ldots, 10$ and $\beta_{i,k}$ denotes the household-specific preference parameter. When $k = 3$ and $k = 4$, $\beta_{i,k}$ denotes the coefficients of the dichotomous variables, which are estimated by probit models. The estimation strategy is stated in the following section.

To recover the preference parameters, we apply the hedonic approach proposed by Bajari and Kahn (2005).[3] We assume that the local non-parametric hedonic price function has the following log-linear form for each market:

$$
\begin{aligned}
p_j = {}& \beta_{0;j^*} + \beta_{1;j^*} log(Rooms_j) + \beta_{2;j^*} log(Builtage_j) \\
& + \beta_{3;j^*} Single_j + \beta_{4;j^*} Own_j \\
& + \beta_{5;j^*} log(mSpanish_j) + \beta_{6;j^*} log(mHindi_j) \\
& + \beta_{7;j^*} log(mChinese_j) \\
& + \beta_{8;j^*} log(mEnglishwhite_j) \\
& + \beta_{9;j^*} log(mEnglishnonwhite_j) \\
& + \beta_{10;j^*} log(mCollege_j) + \xi_j;
\end{aligned}
$$

$$(5)$$

where, $\beta_{k;j^*}(k = 0; 1; \ldots; 10)$ is the hedonic coefficient for housing unit j^*. The implicit price of j^* depends on the physical attributes, community attributes, and the unobserved attribute. Each $\beta_{k;j^*}$ estimates how much an independent variable contributes to the price of the housing unit j^*. This estimation is executed at the city level. ξ_j denotes the unobserved attribute of each housing unit.

As suggested by Fan and Gijbels (2018), the hedonic coefficients can be estimated by weighted least squares (WLS) with variable weights for each residence. Therefore, for each j^*, we estimate the corresponding hedonic coefficients as follows:

$$
\beta_{j^*} = argmax(\boldsymbol{P} - \boldsymbol{X}\beta)' \boldsymbol{W} (\boldsymbol{P} - \boldsymbol{X}\beta); \qquad (6)
$$

where

$$
\boldsymbol{P} = [p_j] : (J \times 1);
$$

$$
\boldsymbol{X} = [\boldsymbol{x}_j] : (J \times 10);
$$

$$
\boldsymbol{W} = diag\{K_h(\boldsymbol{x}_j - \boldsymbol{x}_{j^*})\} : (J \times J):
$$

J is the number of housing units in each metropolitan area m. $\boldsymbol{W}$ is a $J \times J$ diagonal matrix of kernel weights. Each element on the diagonal is a normal kernel function with bandwidth equal to 3 (that is, $h = 3$):

$$
K(\boldsymbol{x}_j - \boldsymbol{x}_{j^*}) = \prod_{k=0}^{10} N((\boldsymbol{x}_j(k) - \boldsymbol{x}_{j^*}(k)) = \sigma_k^2);
$$

$$
K_h(\boldsymbol{x}_j - \boldsymbol{x}_{j^*}) = K((\boldsymbol{x}_j - \boldsymbol{x}_{j^*}) = h) = h;
$$

where N is the probability density function (PDF) of the standard normal distribution of each characteristic k. K is a function equal to the product of all the standard normal PDFs. σ_k^2 is the standard deviation of characteristic k.

Following the hedonic literature, we assume that the unobserved characteristic ξ_{j^*} is independent of the observable variables. After conducting the WLS and hedonic regressions, ξ_{j^*} and the household-specific preference parameters

the marginal cost $\frac{p}{Single}$ is in fact the estimated parameter $_{3:j^*(i)}$ from Equation (5). Thus, in the likelihood function of the dummy variable *single detached house*, we replace $\frac{p_m}{Single}$ by $_{3:j^*(i)}$. Moreover, we confine the coe cient of the implicit price to be -1. The likelihood function of the *single-detached house* dummy variable is as follows:

$$L(\ ;0;\ ) = \prod_{i=1}^{I} \left[1 - N\left({}_{0:k} + \sum_{s} {}_{k:s}d_{i:s} - {}_{3:j^*(i)};0; \right) \right]^{1-Single_{j^*(i)}} \times \left[N\left({}_{0:k} + \sum_{s} {}_{k:s}d_{i:s} - {}_{3:j^*(i)};0; \right) \right]^{Single_{j^*(i)}} :$$

(10)

The likelihood function of the *own* dummy is defined in the same way.

III. D t d emp r mot v to

Data

The data on household head demographics and housing unit characteristics

are comparable, except that Chicago consists of slightly more English and Hindi and related language speakers and fewer Spanish and Chinese speakers. The sample sizes range from 3,941 to 5,629. Overall, the distributions of the languages spoken do not vary much across the three cities.

The English-speaker sample is further broken down into white and non-white. English-speaking non-white make up 33.27% in Atlanta, much higher than that in Chicago (16.32%) and Dallas (17.61%). Among English-speaking non-white groups, Blacks account for 85.29% in Atlanta, 65.03% in Chicago, and 70.45% in Dallas. On average, Chinese

Table 2. Descriptive OLS or probit regressions of housing choice – Atlanta.

Variables	(1) Rooms	(2) Builtage	(3) Single	(4) Own	(5) mSpanish	(6) mHindi	(7) mChinese	(8) mEnglishnonwhite	(9) mEnglishwhite	(10) mCollege
Hhincome1000	0.0062***	−0.0081**	0.0004***	0.0007***	−0.0000*	0.0000***	0.0000*	−0.0001***	0.0001***	0.0002***
	(0.0004)	(0.0032)	(0.0001)	(0.0001)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
College	0.2496***	−2.4417***	−0.0324**	0.1364***	−0.0066***	0.0025***	0.0011**	−0.0396***	0.0396***	0.0630***
	(0.0809)	(0.6716)	(0.0151)	(0.0151)	(0.0021)	(0.0004)	(0.0005)	(0.0058)	(0.0057)	(0.0043)
Famsize	0.6445***	0.0268	0.0892***	0.0216***	0.0002	−0.0002	−0.0002	−0.0003	0.0012	−0.0137***
	(0.0311)	(0.2583)	(0.0058)	(0.0058)	(0.0008)	(0.0002)	(0.0002)	(0.0022)	(0.0022)	(0.0016)
Age	0.0525***	−0.1005***	0.0079***	0.0074***	0.0000	0.0000	0.0000	−0.0005*	0.0005*	−0.0013***
	(0.0037)	(0.0308)	(0.0007)	(0.0007)	(0.0001)	(0.0000)	(0.0000)	(0.0003)	(0.0003)	(0.0002)
Married	0.7361***	−1.9586**	0.1956***	0.2288***	0.0073***	0.0006	−0.0001	−0.0326***	0.0236***	−0.0266***
	(0.0928)	(0.7706)	(0.0173)	(0.0173)	(0.0024)	(0.0005)	(0.0005)	(0.0067)	(0.0065)	(0.0049)
Male	0.0533	0.2538	0.0057	0.0274*	0.0003	0.0005	−0.0001	−0.0052	0.0032	0.0080**
	(0.0751)	(0.6233)	(0.0140)	(0.0140)	(0.0020)	(0.0004)	(0.0004)	(0.0054)	(0.0053)	(0.0039)
Spanish	−1.0970***	−0.6990	−0.2065***	−0.2022***	0.0466***	0.0056***	0.0040***	0.0216**	−0.1054***	−0.0159**
	(0.1322)	(1.0973)	(0.0246)	(0.0246)	(0.0034)	(0.0007)	(0.0008)	(0.0095)	(0.0093)	(0.0069)
Hindi and related	−1.4906***	−9.3888***	−0.2656***	−0.1672***	0.0168***	0.0094***	0.0073***	−0.0179	−0.0416***	0.0214*
	(0.2293)	(1.9032)	(0.0427)	(0.0427)	(0.0060)	(0.0013)	(0.0013)	(0.0165)	(0.0161)	(0.0120)
Chinese	−0.5886*	−9.8539***	−0.1301**	0.0666	0.0023	0.0087***	0.0095***	0.0033	−0.0454*	0.0453**
	(0.3377)	(2.8026)	(0.0629)	(0.0629)	(0.0088)	(0.0019)	(0.0019)	(0.0242)	(0.0238)	(0.0177)
English-speaking non-white	−0.3748***	−1.9843***	−0.1451***	−0.1816***	0.0104***	−0.0028***	−0.0010***	0.1256***	−0.1347***	−0.0473***
	(0.0852)	(0.7074)	(0.0159)	(0.0159)	(0.0022)	(0.0005)	(0.0005)	(0.0061)	(0.0060)	(0.0045)
Constant	1.6526***	37.1028***	−0.0064	−0.0371	0.0865***	0.0138***	0.0089***	0.3026***	0.5206***	0.4194***
	(0.1707)	(1.4165)	(0.0318)	(0.0318)	(0.0044)	(0.0009)	(0.0010)	(0.0123)	(0.0120)	(0.0090)
Observations	3,941	3,941	3,941	3,941	3,941	3,941	3,941	3,941	3,941	3,941
R-squared	0.3666	0.0261	0.2684	0.2767	0.0627	0.0762	0.0283	0.1755	0.1915	0.1980

Standard errors are in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Each column presents a separate ordinary least squares regression. The dependent variables Single and Own are dummy variables; mSpanish, mHindi, mChinese, mEnglishnonwhite, mEnglishwhite, mEnglishwhite and mCollege are community average variables; Rooms and Builtage are physical housing attributes. In each regression, the omitted category is female English-speaking white who are single and have not graduated from college. Household income is measured in thousands of dollars.

Table 3. Descriptive OLS or probit regressions of migrant housing choice -Chicago.

Variables	(1) Rooms	(2) Builtage	(3) Single	(4) Own	(5) mSpanish	(6) mHindi	(7) mChinese	(8) mEnglishnonwhite	(9) mEnglishwhite	(10) mCollege
Hhincome1000	0.0063***	−0.0248***	0.0006***	0.0008***	−0.0000*	−0.0000	0.0000	−0.0001***	0.0001**	0.0003***
	(0.0003)	(0.0038)	(0.0001)	(0.0001)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
College	0.1785**	−0.6951	−0.0653***	0.0670***	−0.0038	0.0034***	0.0024***	−0.0055	−0.0119**	0.0771***
	(0.0720)	(0.8082)	(0.0150)	(0.0155)	(0.0032)	(0.0008)	(0.0009)	(0.0042)	(0.0053)	(0.0045)
Famsize	0.5857***	−0.2832	0.1112***	0.0426***	−0.0027**	−0.0004	−0.0005	0.0013	0.0050**	−0.0139***
	(0.0269)	(0.3017)	(0.0056)	(0.0058)	(0.0012)	(0.0003)	(0.0003)	(0.0016)	(0.0020)	(0.0017)
Age	0.0353***	−0.0772**	0.0049***	0.0058***	−0.0002*	0.0000	−0.0001	0.0001	0.0000	−0.0012***
	(0.0033)	(0.0370)	(0.0007)	(0.0007)	(0.0001)	(0.0000)	(0.0000)	(0.0002)	(0.0002)	(0.0002)
Married	0.6031***	−1.4341	0.1677***	0.1894***	0.0003	0.0003	−0.0008	−0.0215***	0.0201***	−0.0081
	(0.0798)	(0.8949)	(0.0166)	(0.0172)	(0.0035)	(0.0009)	(0.0009)	(0.0047)	(0.0059)	(0.0050)
Male	0.0085	−0.7885	0.0464***	0.0594***	−0.0034	−0.0002	0.0006	−0.0080**	0.0133***	−0.0011
	(0.0657)	(0.7369)	(0.0137)	(0.0142)	(0.0029)	(0.0007)	(0.0008)	(0.0039)	(0.0048)	(0.0041)
Spanish	−0.7974***	6.4716***	−0.1565***	−0.1084***	0.0799***	0.0012	0.0062***	0.0258***	−0.1184***	0.0005
	(0.0976)	(1.0955)	(0.0204)	(0.0211)	(0.0043)	(0.0011)	(0.0012)	(0.0057)	(0.0072)	(0.0061)
Hindi and related	−1.6014***	−7.6901***	−0.2764***	−0.1494***	0.0017	0.0204***	0.0028	0.0058	−0.0684***	0.0245**
	(0.1900)	(2.1318)	(0.0396)	(0.0410)	(0.0084)	(0.0021)	(0.0023)	(0.0112)	(0.0140)	(0.0120)
Chinese	−0.7070**	−7.6869**	−0.2416***	−0.0428	0.0667***	0.0014	0.0526***	0.0168	−0.1385***	−0.0093
	(0.2888)	(3.2404)	(0.0603)	(0.0623)	(0.0127)	(0.0031)	(0.0034)	(0.0170)	(0.0213)	(0.0182)
English-speaking non-white	−0.4111***	1.7903*	−0.1209***	−0.1738***	0.0157***	−0.0025**	0.0043***	0.1548***	−0.1617***	−0.0266***
	(0.0906)	(1.0166)	(0.0189)	(0.0195)	(0.0040)	(0.0010)	(0.0011)	(0.0053)	(0.0067)	(0.0057)
Constant	2.0756***	51.9888***	−0.0684**	0.0027	0.1312***	0.0188***	0.0124***	0.1198***	0.6349***	0.3852***
	(0.1486)	(1.6677)	(0.0310)	(0.0321)	(0.0066)	(0.0016)	(0.0018)	(0.0087)	(0.0109)	(0.0093)
Observations	4,129	4,129	4,129	4,129	4,129	4,129	4,129	4,129	4,129	4,129
R-squared	0.3573	0.0445	0.2670	0.2164	0.0978	0.0347	0.0615	0.2025	0.1761	0.1831

Standard errors are in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Each column presents a separate ordinary least squares regression. The dependent variables Single and Own are dummy variables; mSpanish, mHindi, mChinese, mEnglishnonwhite, mEnglishwhite and mCollege are community average variables; Rooms and Builtage are physical housing attributes. In each regression, the omitted category is female English-speaking white who are single and have not graduated from college. Household income is measured in thousands of dollars.

Table 4. Descriptive OLS or probit regressions of migrant housing choice – Dallas.

Variables	(1) Rooms	(2) Builtage	(3) Single	(4) Own	(5) mSpanish	(6) mHindi	(7) mChinese	(8) mEnglishnonwhite	(9) mEnglishwhite	(10) mCollege
Hhincome1000	0.0070***	−0.0114***	0.0006***	0.0009***	−0.0000	0.0000***	0.0000***	−0.0000***	0.0000**	0.0002***
	(0.0003)	(0.0027)	(0.0001)	(0.0001)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
College	0.2866***	−3.9502***	0.0334***	0.1199***	−0.0126***	0.0030***	0.0028***	−0.0039**	0.0080**	0.0485***
	(0.0610)	(0.5534)	(0.0119)	(0.0117)	(0.0025)	(0.0006)	(0.0004)	(0.0020)	(0.0038)	(0.0032)
Famsize	0.6172***	0.4445**	0.0975***	0.0539***	−0.0006	−0.0004	−0.0004**	−0.0006	0.0027*	−0.0142***
	(0.0240)	(0.2175)	(0.0047)	(0.0046)	(0.0010)	(0.0002)	(0.0002)	(0.0008)	(0.0015)	(0.0013)
Age	0.0467***	−0.0062	0.0076***	0.0073***	−0.0004***	0.0000	0.0000	−0.0001	0.0004**	−0.0007***
	(0.0028)	(0.0253)	(0.0005)	(0.0005)	(0.0001)	(0.0000)	(0.0000)	(0.0001)	(0.0002)	(0.0001)
Married	0.6821***	−1.3030**	0.2157***	0.2289***	−0.0131***	−0.0001	−0.0012***	−0.0026	0.0170***	−0.0103***
	(0.0708)	(0.6425)	(0.0138)	(0.0136)	(0.0029)	(0.0007)	(0.0005)	(0.0023)	(0.0044)	(0.0037)
Male	−0.0929	−0.6925	−0.0045	0.0142	0.0024	0.0005	0.0001	−0.0012	−0.0032	0.0034
	(0.0573)	(0.5201)	(0.0111)	(0.0110)	(0.0024)	(0.0006)	(0.0004)	(0.0018)	(0.0035)	(0.0030)
Spanish	−0.8673***	4.8883***	−0.1671***	−0.1293***	0.0591***	0.0004	−0.0008	0.0156***	−0.0814***	−0.0107***
	(0.0800)	(0.7265)	(0.0156)	(0.0154)	(0.0033)	(0.0008)	(0.0005)	(0.0026)	(0.0050)	(0.0042)
Hindi and related	−0.7652***	−8.0280***	−0.2255***	−0.1394***	−0.0032	0.0255***	0.0119***	0.0101*	−0.0931***	0.0431***
	(0.1793)	(1.6274)	(0.0348)	(0.0344)	(0.0074)	(0.0017)	(0.0012)	(0.0058)	(0.0111)	(0.0095)
Chinese	−0.6511***	−4.7486**	−0.1160**	0.0709	−0.0106	0.0246***	0.0187***	−0.0025	−0.0726***	0.0471***
	(0.2381)	(2.1616)	(0.0463)	(0.0457)	(0.0099)	(0.0023)	(0.0015)	(0.0077)	(0.0147)	(0.0126)
English-speaking non-white	−0.5266***	−1.8890***	−0.1821***	−0.1578***	0.0285***	0.0016**	−0.0003	0.0206***	−0.0606***	−0.0133***
	(0.0764)	(0.6933)	(0.0148)	(0.0147)	(0.0032)	(0.0007)	(0.0005)	(0.0025)	(0.0047)	(0.0040)
Constant	1.2619***	31.6992***	−0.1359***	−0.2219***	0.1743***	0.0138***	0.0101***	0.1600***	0.5740***	0.3793***
	(0.1231)	(1.1173)	(0.0239)	(0.0236)	(0.0051)	(0.0012)	(0.0008)	(0.0040)	(0.0076)	(0.0065)
Observations	5,629	5,629	5,629	5,629	5,629	5,629	5,629	5,629	5,629	5,629
R-squared	0.4197	0.0488	0.3452	0.3367	0.0942	0.0713	0.0697	0.0334	0.0900	0.1359

Standard errors are in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Each column presents a separate ordinary least squares regression. The dependent variables Single and Own are dummy variables; mSpanish, mHindi, mChinese, mEnglishnonwhite, mEnglishwhite, and mCollege are community average variables; Rooms and Builtage are physical housing attributes. In each regression, the omitted category is female English-speaking white who are single and have not graduated from college. Household income is measured in thousands of dollars.

may prefer to reside with others who speak the same language. More evidence is needed to support the latter hypothesis, and it will be discussed in the following section.

In Tables 2–4, columns 59 highlight the current residential segregation[6] or integration status. In Atlanta, all the minority groups live in communities with 4%-13% fewer English-speaking white compared with the baseline group. This may reflect a certain degree of segregation between English-speaking white and minorities. Based on this criterion, Chicago is the most segregated city, with the minorities living in communities with 6%-16% fewer English-speaking white. Dallas is in the middle, with the percentage ranging from 6% to 9%.

The baseline model provides some evidence on the determinants of residential segregation; however, it does not allow us to draw any causal conclusions because of the potential endogeneity issue. The endogeneity issue is a common empirical problem. Our approach originates from Bajari and Benkard (2005), which aims to address the endogeneity issue in the second stage of hedonic regression (Bartik 1987; Epple 1987). The advantage of the approach is that we can avoid estimating the second stage of the classic hedonic function (Rosen 1974) by assuming a linear utility function. Therefore, we do not need to estimate the whole market, and the household-level preference in our model can be locally identified. However, we still make the standard hedonic assumption that the unobserved product characteristics are independent of the observed product characteristics. We can recover only one single-dimension unobserved housing characteristic. Therefore, we must acknowledge that we cannot resolve all potential endogeneity problems. For example, some within-city amenities affect both housing decisions and preferences, which may still be excluded from our model and are beyond the capability of our model to capture. In the following section, we adopt the structural estimation model and estimate the willingness to pay of minority groups, allowing us to draw causal inferences.

IV. Structural model

Starting from the utility maximization problem, we first obtain the willingness to pay for each physical housing attribute and community human capital level, as measured by the percentage of college educated people. Next, we estimate the demand for the community-level percentage of different language speakers.

A key difference in interpreting the estimations for dichotomous and non-dichotomous variables needs to be addressed. For all the physical attributes that take dichotomous values, the estimates measure the willingness to pay for the jump from 0 to 1. Therefore, we can directly infer from the estimates how much a household would be willing to pay for an extra feature, maybe a room or a single detached unit. In the case of non-dichotomous variables, owing to the multi-valued or continuous nature embedded, we cannot interpret the coefficients in the same way. Instead, we estimate how much each household would be willing to pay for a fixed increase in any of the non-dichotomous variables, for example, an increase in the number of rooms from four to six or a 25% increase in the number of college educated residents or specific language speakers.

The ideal level of integration/segregation level varies across different language groups and cities. To assist interpreting the signs, an underlying assumption is imposed: all the language groups are presumed to have their own ideal level of integration/segregation relative to the baseline group, probably not the two extremes. The willingness to pay to live in a community with a higher percentage of people who speak a particular language, compared with the baseline group, not only depends on the current state of physical integration/segregation, but also is closely related to the household's preferred level of integration/segregation. A positive or negative

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[6]OLS or Probit model are reduced-form regressions that can only infer correlations between attributes and residential choices of households.

sign does not directly indicate how severe or mild the current spatial segregation is; rather, it indicates how much segregation/integration (more or less) is desired by a household. A positive willingness to pay for a higher percentage of own language speakers means they desire more social and cultural support from others who speak their language. This reveals that the current percentage of own language speakers in the community is too low and a higher level of segregation is preferred. This is how we arrive at our conclusions about the present level of integration or segregation in the three cities. To sum up, no absolute measurement can be used to draw a conclusion on whether a community is over-integrated or over-segregated. We may only compare the current situation of minorities with their subjectively desired level, or, in other words, spatial segregation to preference segregation.

Willingness to pay for housing attributes and community characteristics

In this subsection, we summarize the results of willingness to pay for all sorts of physical housing attributes and community-level, non-language-related characteristics – the percentage of college educated individuals. The results are presented in Tables 5–9.

For all the non-dichotomous attributes or characteristics, we compute the marginal effects for a fixed increase, including increasing the number of rooms from four to six, building age from 10 to 35 years, and percentage of college educated households in the community from 10% to 35%. Conceptually, considering the number of rooms as an example, the marginal effect is defined as $WTP_{i;rooms} = $ the WTP when the number of rooms increases from four to six. The other marginal effects can be defined in a similar way. For the other two dichotomous characteristics (single detached and ownership), computing the marginal effects is straightforward.

In all three cities, higher income, college educated, older, and married households with larger families are found to be unanimously willing to pay premiums for more

Table 6. Estimates of the willingness to pay for an older building.

Variables	Atlanta	Chicago	Dallas
Hhincome1000	−3.639***	−6.732***	−3.481***
	(0.201)	(0.285)	(0.195)
College	−459.558***	−747.110***	−274.983***
	(41.924)	(61.233)	(39.901)
Famsize	−146.390***	−186.873***	−108.984***
	(16.121)	(22.855)	(15.683)
Age	−19.463***	−15.942***	−11.280***
	(1.925)	(2.803)	(1.825)
Married	−502.281***	−628.591***	−195.021***
	(48.106)	(67.801)	(46.330)
Male	−58.221	−143.812**	25.877
	(38.911)	(55.826)	(37.504)
Spanish	596.763***	450.146***	−77.935
	(68.499)	(82.999)	(52.386)
Hindi and related	355.447***	217.394	−35.939
	(118.806)	(161.514)	(117.339)
Chinese	−310.768*	245.196	125.527
	(174.950)	(245.499)	(155.860)
English-speaking non-white	733.699***	1,094.786***	69.629
	(44.158)	(77.024)	(49.989)
Constant	−2,278.304***	−3,313.431***	−2,008.781***
	(88.421)	(126.346)	(80.560)
Observations	3,941	4,129	5,629
R-squared	0.386	0.374	0.154

Standard errors are in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Each column presents a separate ordinary least squares regression. The dependent variable is a migrant's willingness to pay per year (in dollars) for an increase from 10 to 35 years in the age of a housing unit $((log(35) − log(10)) \cdot \beta_{i\cdot 2})$, holding all other housing attributes constant. The omitted category is female English-speaking white who are single and have not graduated from college. Annual household income is measured in thousands of dollars.

Table 7. Probit estimates of the demand for single detached houses.

Variables	Atlanta	Chicago	Dallas
Hhincome1000	13.691***	15.52***	3.439***
	(1.414)	(1.384)	(0.547)
College	582.452**	−326.999	156.094
	(238.043)	(243.544)	(105.487)
Famsize	1334.228***	1720.024***	344.403***
	(123.284)	(131.829)	(44.129)
Age	124.457***	77.389***	24.909***
	(12.179)	(11.39)	(4.903)
Married	2771.502***	2472.003***	684.984***
	(287.336)	(273.839)	(122.359)
Male	189.675	869.004***	−42.434
	(219.013)	(219.531)	(98.649)
Spanish	−3828.97***	−2914.998***	−195.023
	(412.168)	(343.437)	(139.029)
Hindi and related	−3815.606***	−4241***	−389.844
	(681.854)	(676.693)	(314.98)
Chinese	−922.124	−5855***	−631.564
	(989.833)	(989.141)	(412.015)
English-speaking non-white	−3352.196***	−3500.998***	−374.446***
	(270.987)	(316.507)	(134.814)
Price of single detached unit	−1	−1	−1
Constant	−4367.751***	−4582.992***	−860.255***
	(633.625)	(677.449)	(237.858)
Pseudo-R2	0.438	0.43	0.0335
Observations	3941	4129	5629

Standard errors are in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Each column presents a separate probit estimate. The dependent variable is a dummy variable, "Single" equals 1 if the housing unit is single detached and 0 otherwise. P-values are reported in parentheses. The omitted category is female English-speaking white who are single and have not graduated from college. Annual household income is measured in thousands of dollars, and the implicit price for single detached house is in dollars.

may suggest that households are truly willing to pay a premium for easier transit and a shorter commute. Perhaps they have a tendency to work in highly urbanized industries, a phenomenon known as 'job sprawl' (Bajari and Kahn 2005), and their job locations are systematically different from those of English-speaking white group. Nevertheless, we are unable to control for any commuting-related factors in the model since they are jointly determined with housing decisions. We provide some supporting evidence by conducting a T-test to demonstrate older residences are associated with shorter commutes. Based on the age of housing, households are categorized into two groups: building age undefined years and undefined years. We show that households who acquire older homes spend significantly less time commuting.

We extract the total amount of time in minutes it took a respondent to travel from home to work during the previous week from the data and perform the T-test. The average travel time to work is 28.691 minutes for those who acquired a home older than 20 years and 30.660 minutes for those

who purchased a home less than 20 years. The difference is significant with a T-value of 5.161, as households who acquire newer homes commute for an additional 1.969 minutes.

In the case of single detached houses as depicted in Table 7, the willingness to pay is negative for all groups in Chicago, all groups except Chinese speakers in Atlanta and English-speaking non-white groups in Dallas. These findings lead to a tentative conclusion that minority groups are likely to locate in urban areas because housing units there tend to be smaller, older, and less likely to be single detached than those in suburban areas. Along similar lines, Bajari and Kahn (2005) explain urbanization of Blacks by showing their unwillingness to pay for two more rooms.

As depicted in Table 8, for housing ownership in general, English-speaking non-white and Hindi and related language speakers do not prefer to own a property in any of the three cities, similar to Spanish speakers in Atlanta and

Table 8. Probit estimates of the demand for ownership.

Variables	Atlanta	Chicago	Dallas
Hhincome1000	8.852***	8.088***	9.438***
	(0.892)	(0.729)	(0.897)
College	1628.375***	1034.537***	1741.66***
	(151.457)	(121.367)	(165.342)
Famsize	188.024***	140.972***	112.177*
	(57.556)	(46.245)	(64.753)
Age	51.996***	21.084***	42.507***
	(7.089)	(5.596)	(7.779)
Married	1542.987***	860.545***	1436.109***
	(175.034)	(136.165)	(192.462)
Male	264.659*	335.948***	183.764
	(137.308)	(110.961)	(152.41)
Spanish	−1777.462***	39.453	−1102.452***
	(247.598)	(162.662)	(216.249)
Hindi and related	−1397.018***	−860.606***	−1179.127**
	(407.734)	(316.701)	(461.779)
Chinese	157.505	2279.415***	908.43
	(604.579)	(454.196)	(619.022)
English-speaking non-white	−2268.543***	−819.967***	−1659.048***
	(160.376)	(155.164)	(212.478)
Price of ownership	−1	−1	−1
Constant	234.871	−229.144	−360.452
	(349.181)	(268.702)	(403.462)
Pseudo-R2	0.384	0.219	

Dallas. Chinese speakers prefer to own one, and they are willing to pay $2,279.41 more in Chicago. The estimates are positive but insignificant in the other two cities.

The results for willingness to pay obtained from the structural model vary from the benchmark OLS/probit estimations. This further confirms that the endogeneity issue might be more problematic in the reduced form regressions.

Finally, we estimate the minorities' willingness to pay for an increase in the percentage of college educated individuals in the community from 10% to 35%, holding all else equal. Table 9 depicts that all the minority groups have negative willingness to pay in all three cities except for Chinese speakers in Atlanta, in line with the finding for Blacks documented in Bajari and Kahn (2005).

All the regression results have been interpreted under the assumption that all else is equal and we only allow one variable to change at a time. We recognize that demographic and taste differences jointly determine the demand for the level of human capital in the community, and all else is not being equal.

According to Table 1, Hindi and related languages and Chinese speakers are the minority groups with the highest level of education among all the minority groups, while Spanish and English-speaking non-white groups have the lowest average education level. The negative willingness to pay for higher degree of college education level in the community suggests that all minority groups engage in sorting behaviours. Speakers of Hindi and related languages, and Chinese already reside in communities with a high ratio of college graduates, and they would not wish to pay more for further increments. In contrast, Spanish- and English-speaking non-white groups choose to live in urban districts with smaller proportion of college graduates relative to the suburbs during the urbanization process, as found by Bajari and Kahn (2005).

To summarize our findings on all the minority groups except Chinese speakers, the preferences for fewer rooms, older buildings, non-single detached units, non-ownership, and fewer college educated individuals in the community provide strong evidence of their enthusiasm for urbanization. For the Chinese speakers, the findings are mixed. Considering that the Chinese speakers are composed of Mandarin and Cantonese speakers, the huge heterogeneity between the two language subgroups complicates the interpretation of the estimates.

Demand for integration and segregation

This section focuses on integration and segregation, specifically the extent to which minority groups are willing to become more integrated or separated, i.e. the gap between spatial and preference segregation.

Demand for integration

We measure the demand for a higher level of integration, that is, we estimate household i's willingness to pay for increasing the percentage of the English-speaking white group in the community from 10% to 35%, denoted by $WTP_{i;Englishwhite}$. We apply the random coefficient estimation strategy by assuming that all other groups decline proportionally.

$$
\begin{aligned}
WTP_{i;Englishwhite} = & \;\beta_{i8} \times (\log(35\%) - \log(10\%)) \\
& + \beta_{i5} \times (\log(65\% \times R_{i;Spanish}) - \log(90\% \times R_{i;Spanish})) \\
& + \beta_{i6} \times (\log(65\% \times R_{i;Hindi}) - \log(90\% \times R_{i;Hindi})) \\
& + \beta_{i7} \times (\log(65\% \times R_{i;Chinese}) - \log(90\% \times R_{i;Chinese})) cr
\end{aligned} \quad (11)
$$

where $R_{i;Spanish}$, $R_{i;Hindi}$, $R_{i;Chinese}$ and $R_{i;Englishnonwhite}$ denote the initial proportions of each minority group in each IPUM community. Without loss of generality, we assume that by increasing the proportion of English-speaking white, the percentage of each minority group in the community is reduced by an equal amount. Similarly, by estimating the willingness to pay for an increase of 25% of any one of the minority groups $WTP_{i;Spanish}$, $WTP_{i;Hindi}$, $WTP_{i;Chinese}$ and $WTP_{i;Englishnonwhite}$, we evaluate the demand for residential segregation.

Next, we regress the willingness to pay for an increase in the proportion of English-speaking white (from 10% to 35%) in the community on household demographics. Table 10 presents the results for the three cities.

In Chicago and Dallas, higher income, college education, larger family size, older age, married status, and being male all show negative impacts on the willingness to pay for living in a community that has 35% of the English-speaking white versus a community that has 10% of the English-speaking white (holding everything else unchanged). In Atlanta, the demographic effects are all positive.

The minority groups exhibit different preferences for living with more English-speaking white. In Chicago, all the minority households are willing to pay more to live in a whiter English-speaking community, reflecting a unanimous taste for a higher level of integration. The level of spatial segregation exceeds that of preference segregation, and they desire to be more integrated.

In Atlanta, Spanish, Hindi and related languages and English-speaking non-white groups are willing

Table 10. Estimates of the willingness to pay for more English-speaking white.

Variables	Atlanta	Chicago	Dallas
Hhincome1000	25.712***	−29.557***	−22.577***
	(1.286)	(1.383)	(1.291)
College	2,593.498***	−1,473.808***	−2,595.174***
	(267.736)	(297.482)	(263.704)
Famsize	962.009***	−1,651.297***	−1,030.044***
	(102.956)	(111.033)	(103.648)
Age	84.881***	−94.643***	−124.810***
	(12.297)	(13.617)	(12.063)
Married	2,362.402***	−3,153.536***	−3,823.226***
	(307.220)	(329.391)	(306.199)
Male	653.693***	−1,000.501***	−259.187
	(248.494)	(271.211)	(247.867)
Spanish	−4,307.660***	4,917.733***	2,804.992***
	(437.455)	(403.227)	(346.221)
Hindi and related	−2,305.403***	3,507.844***	−1,366.485*
	(758.726)	(784.666)	(775.498)
Chinese	2,365.332**	4,964.249***	−1,889.101*
	(1,117.276)	(1,192.679)	(1,030.081)
English-speaking non-white	−3,687.384***	5,771.022***	1,523.528***
	(282.002)	(374.195)	(330.378)
Constant	−2,594.596***	−1,373.644**	5,416.685***
	(564.678)	(613.812)	(532.421)
Observations	3,941	4,129	5,629
R-squared	0.351	0.379	0.285

Standard errors are in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Each column presents a separate ordinary least squares regression. The dependent variable is a migrant's willingness to pay per year (in dollars) for an increase from 10% to 35% of community members who are English-speaking white (that is, $WTP_{i;Englishwhite}$), holding all other housing attributes constant. The omitted category is female English-speaking white who are single and have not graduated from college. Both housing expenditure per year and annual household income are measured in thousands of dollars.

to pay less compared to the English-speaking white to live in a community with 25% more English-speaking white, showing no interest in more integration. Spanish and English-speaking non-white groups are willing to pay $4,308 and $3,687 less, respectively. The magnitudes are large enough to offset the positive income and education effects, which have minimal impacts on these two minority groups per se, as they are the least paid and the least educated groups. Such large negative willingness to pay indicates that the level of preference segregation is a lot lower than their current spatial segregation for them in Atlanta. In contrast, Chinese speakers are willing to pay $2,365 more. Considering that the Chinese are one of the best educated groups, the positive language effect strengthens the education effect, implying a very strong preference for a higher level of integration.

In Dallas, only Spanish and English-speaking non-white groups show interests in greater integration. The same observation applies to Hindi and related languages and Chinese speakers. The education effect intensifies the language effect, and both groups show strong

Table 14. Estimates of the willingness to pay for more English-speaking non-white groups.

Variables	Atlanta	Chicago	Dallas
Hhincome1000	1.283***	10.100***	−9.249***
	(0.407)	(0.483)	(0.447)
College	837.936***	682.021***	−852.752***
	(84.741)	(103.910)	(91.305)
Famsize	−113.838***	364.068***	−353.162***
	(32.586)	(38.783)	(35.887)
Age	−12.763***	17.699***	−38.554***
	(3.892)	(4.756)	(4.177)
Married	−52.710	855.232***	−1,199.428***
	(97.238)	(115.055)	(106.018)
Male	49.653	264.232***	14.798
	(78.651)	(94.733)	(85.822)
Spanish	−874.176***	−1,804.990***	1,544.197***
	(138.459)	(140.846)	(119.876)
Hindi and related	234.966	−808.259***	310.101
	(240.144)	(274.082)	(268.509)
Chinese	158.629	−1,674.610***	−227.892
	(353.628)	(416.600)	(356.656)
English-speaking non-white	−1,500.361***	−2,266.186***	887.382***
	(89.256)	(130.705)	(114.390)
Constant	−348.808*	941.064***	−581.929***
	(178.726)	(214.403)	(184.346)
Observations	3,941	4,129	5,629
R-squared	0.144	0.336	0.308

Standard errors are in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Each column presents a separate ordinary least squares regression. The dependent variable is a migrant's willingness to pay per year (in dollars) for an increase from 10% to 35% of community members who are non-white and speak English at home (that is, $WTP_{i:Englishnonwhite}$), holding all other housing attributes constant. The omitted category is female English-speaking white who are single and have not graduated from college. Annual household income is measured in thousands of dollars.

evidenced by their -$874 willingness to pay. And, the English-speaking non-white groups do not prefer to live in communities with more Spanish speakers either, with the willingness to pay being $236 less. In Dallas, Chinese speakers are interested in living in communities with more Hindi and related language speakers and are willing to pay $1,403 more; Hindi and related language speakers have

a similar attitude towards Chinese speakers and are willing to pay $1,342 more to live in a community with more Chinese speakers.

A corollary inference can be formed from the discovered patterns. If a minority group wishes to become more integrated, they desire to have fewer speakers of its own language, but may not prefer to reduce the proportion of other minority groups. To be segregated from the mainstream, a minority group would want to dwell in a neighbourhood with more people who speak their own language.

V. Further discussion

We have depended on a rough classification of spoken languages up until this point. We further subdivide a broad category of language group into finer divisions and conduct several tests. We employ Chinese-speaking individuals to elaborate our reasoning. Same reasoning can be applied to the Hindi and related languages speakers.

The willingness of Chinese speakers to pay more to reside in a community with 25% more speakers of their own language reflects the average preference of Cantonese and Mandarin speakers. If our hypothesis on language as a determinant of integration or segregation is correct, we anticipate that doing separate tests for Cantonese and Mandarin speakers will amplify the effect. If Chinese speakers demonstrate a preference for more Chinese, we believe that each subgroup will be more eager to have speakers of their own subdivided language present, thus embracing the greater convenience and sense of belonging.

Table 15. WTP for Hindi and related language speakers versus WTP for Hindi speakers.

Variables	Chicago		Dallas	
	WTP for Hindi and Related	WTP for Hindi-only	WTP for Hindi and Related	WTP for Hindi-only
Hindi and Related	−847.957***		1,946.585***	
	(184.688)		(366.814)	
Hindi-only		−1,353.624***		5,163.574***
		(343.203)		(886.155)
Related		−440.607		3,560.636***
		(273.532)		(800.966)

This table shows the willingness to pay (WTP) for a higher percentage of Hindi and related language speakers and a higher percentage of Hindi-only speakers per se, respectively. Standard errors are in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. The omitted category is female English-speaking white who are single and have not graduated from college. Annual household income is measured in thousands of dollars, and the implicit price for a single detached house is in dollars.

Similarly, if Chinese speakers resist having more Chinese in their communities, we anticipate that the negative feelings will intensify.

Chinese and Hindi and related languages provide excellent test cases for our idea. However, due to the problem of missing data, there are insufficient samples to conduct empirical tests for Chinese speakers, and the only alternative is to test Hindi and related language speakers. We divide them into two groups based on language classification by separating Hindi from the rest of the category and conduct separate estimates for each group.

Table 15 depicts the willingness to pay for a 25% increase in Hindi-only speakers in the community, relative to Table 12's results. We find that the Hindi group's willingness to pay for more of Hindi-only group is -$1,354 in Chicago and $5,164 in Dallas, both of which are significantly greater than the average willingness to pay for an increase in speakers of Hindi and related language. This supports our prediction based on the hypothesis. The finer the classification of a language, the greater the language effects.

VI. Conclusion

This paper analysed the housing choices of minority groups in order to examine their assimilation into mainstream white English-speaking community. In general, the findings indicate that minorities do not prioritize larger rooms, single-family detached homes, or home ownership. They were willing to pay extra for older structures in Chicago and Dallas. With the exception of Chinese speakers, the estimations on housing attributes largely explain the urbanization and segregation of minority groups.

We found that Chicago is the most segregated of the three sample cities. Unlike the classic dissimilarity index, our assessment of the amount of segregation is an indirect technique that discloses each minority group's subjective feelings towards segregation. We discovered evidence that individuals unwilling to pay to live with more English-speaking whites choose segregation to enjoy the comfort of oral communication and to share a wide range of common

values. In addition, we found evidence that the demands for more English-speaking whites and own-language speakers are direct substitutes for achieving a desired level of integration or segregation.

We further demonstrated the significance of language by subdividing the speakers of Hindi and related languages into finer language subgroups. We found that a finer categorization of spoken language results in greater magnitudes of willingness to pay in Chicago and Dallas, offering additional evidence supporting the role of spoken language as a determinant of residential choice, hence shaping spatial segregation.

Notation and description of variables

Notation	Description
Rooms	number of rooms
Builtage	age of the residence (years)
Single	single-detached housing unit (1=yes, 0=no)
Own	ownership of the the housing unit (1=own, 0=rent)
mSpanish	percentage of Spanish speakers
mHindi	percentage of Hind and related language speakers
mChinese	percentage of Chinese speakers
mEnglishwhite	percentage of English-speaking white respondents
mEnglishnonwhite	percentage of English-speaking non-white respondents
mCollege	percentage of college-educated respondents
c	the unobserved attribute of the housing unit
	consumption of a composite commodity
Hhincome1000	household's total annual income (in 1,000 dollars)
College	college-graduated (1=yes, 0=no)
Famsize	family size
Age	the age of the household head
Married	marital status (1=married, 0=not married)
Male	gender (1=male, 0=female)
Spanish	speak Spanish at home (1=yes, 0=no)
Hindi and related	speak Hindi and related language at home (1=yes, 0=no)
Chinese	speak Chinese at home (1=yes, 0=no)
English-speaking non-white	English-speaking non-white (1=yes, 0=no)
English-speaking white	English-speaking white (1=yes, 0=no)

mSpanish, mHindi, mChinese, mEnglishwhite, mEnglishnonwhite, and mCollege are variables at the community level.

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References

Allen, R., S. Burgess, R. Davidson, and F. Windmeijer. 2015. "More Reliable Inference for the Dissimilarity Index of Segregation." *The Econometrics Journal* 18 (1): 40–66. doi:10.1111/ectj.12039.

Alonso-Villar, O., C. Gradin, and C. Del Río. 2013. "Occupational Segregation of Hispanics in Us Metropolitan Areas." *Applied Economics* 45: 4298–4307. doi:10.1080/00036846.2013.778951.

Bajari, P., and C. L. Benkard. 2005. "Demand Estimation with Heterogeneous Consumers and Unobserved Product Characteristics: A Hedonic Approach." *The Journal of Political Economy* 113: 1239–1276. doi:10.1086/498586.

Bajari, P., and M. E. Kahn. 2005. "Estimating Housing Demand with an Application to Explaining Racial Segregation in Cities." *Journal of Business & Economic Statistics* 23: 20–33. doi:10.1198/073500104000000334.

Bartik, T. J. 1987. "The Estimation of Demand Parameters in Hedonic Price Models." *The Journal of Political Economy* 95: 81–88. doi:10.1086/261442.

Bayer, P., R. McMillan, and K. Rueben, 2004a. "*An Equilibrium Model of Sorting in an Urban Housing Market.*" Technical Report. National Bureau of Economic Research.

Bayer, P., R. McMillan, and K. Rueben. 2004b. "What Drives Racial Segregation? New Evidence Using Census Microdata." *Journal of Urban Economics* 56: 514–535. doi:10.1016/j.jue.2004.06.002.

Bayer, P., F. Ferreira, and R. McMillan. 2007. "A Unified Framework for Measuring Preferences for Schools and Neighborhoods." *The Journal of Political Economy* 115: 588–638. doi:10.1086/522381.

Bayer, P., and R. McMillan. 2012. "Tiebout Sorting and Neighborhood Stratification." *Journal of Public Economics* 96: 1129–1143. doi:10.1016/j.jpubeco.2012.02.006.

Bayer, P., R. McMillan, A. Murphy, and C. Timmins. 2016. "A Dynamic Model of Demand for Houses and Neighborhoods." *Econometrica* 84: 893–942. doi:10.3982/ECTA10170.

Bolt, G., D. Phillips, and R. V. Kempen. 2010. "Housing Policy, (de)segregation and Social Mixing: An International Perspective." *Housing Studies* 25: 129–135. doi:10.1080/02673030903564838.

Borjas, G. J. 1995. "Ethnicity, Neighborhoods, and Human-Capital Externalities." *The American Economic Review* 85: 365–390.

Conejeros, R., and M. Vargas. 2012. "Segregation, Exclusion and Compensating Transfers Under a Dynamic Setting." *Applied Economics* 44: 2203–2215. doi:10.1080/00036846.2011.562171.

Cutler, D. M., E. L. Glaeser, and J. L. Vigdor. 1999. "The Rise and Decline of the American Ghetto." *The Journal of Political Economy* 107: 455–506. doi:10.1086/250069.

De la Roca, J., I. G. Ellen, and K. M. O'-Regan. 2014. "Race and Neighborhoods in the 21st Century: What Does Segregation Mean Today?" *Regional Science and Urban Economics* 47: 138–151. doi:10.1016/j.regsciurbeco.2013.09.006.

Epple, D. 1987. "Hedonic Prices and Implicit Markets: Estimating Demand and Supply Functions for Differentiated Products." *The Journal of Political Economy* 95: 59–80. doi:10.1086/261441.

Epple, D., M. Peress, and H. Sieg. 2010. "Identification and Semiparametric Estimation of Equi- Librium Models of Local Jurisdictions." *American Economic Journal: Microeconomics* 2: 195–220.

Fan, J., and I. Gijbels. 2018. *Local Polynomial Modelling and Its Applications: Monographs on Statistics and Applied Probability 66*. Routledge.

Gilroy, P. 2013. *Between Camps: Nations, Cultures and the Allure of Race.* Routledge.

Gradín, C. 2020. "Segregation of Women into Low-Paying Occupations in the United States." *Applied Economics* 52: 1905–1920. doi:10.1080/00036846.2019.1682113.

Gyourko, J., and J. S. Tracy. 1991. "The Structure of Local Public Finance and the Quality of Life." *The Journal of Political Economy* 99: 774–806. doi:10.1086/261778.

Kain, J. F. 1968. "Housing Segregation, Negro Employment, and Metropolitan Decentralization." *The Quarterly Journal of Economics* 82: 175–197. doi:10.2307/1885893.

Koster, H. R. A., J. Van Ommeren, and P. Rietveld. 2016. "Historic Amenities, Income and Sorting of Households." *Journal of Economic Geography* 16: 203–236. doi:10.1093/jeg/lbu047.

Kuminoff, N. V., V. K. Smith, and C. Timmins. 2013. "The New Economics of Equilibrium Sorting and Policy Evaluation Using Housing Markets." *Journal of Economic Literature* 51: 1007–1062. doi:10.1257/jel.51.4.1007.

Massey, D. S., and N. A. Denton. 1987. "Trends in the Residential Segregation of Blacks, Hispanics, and Asians: 1970-1980." *American Sociological Review* 52: 802. doi:10.2307/2095836.

Massey, D. S., and N. A. Denton. 1989. "Hypersegregation in U.S. Metropolitan Areas: Black and Hispanic Segregation Along Five Dimensions." *Demography* 26: 373–391. doi:10.2307/2061599.

Moulin, L., D. Flacher, and H. Harari-Kermadec. 2016. "Tuition Fees and Social Segregation: Lessons from a Natural Experiment at the University of Paris 9-Dauphine." *Applied Economics* 48: 3861–3876. doi:10.1080/00036846.2016.1148253.

Peach, C. 1996. "Good Segregation, Bad Segregation." *Planning Perspectives* 11: 379–398. doi:10.1080/026654396364817.

Phillips, D. 2006. "Parallel Lives? Challenging Discourses of British Muslim Self-Segregation." *Environment and Planning D, Society & Space* 24: 25–40. doi:10.1068/d60j.

Phillips, D., C. Davis, and P. Ratcli e. 2007. "British Asian Narratives of Urban Space." *Transac- Tions of the Institute of British Geographers* 32: 217–234. doi:10.1111/j.1475-5661.2007.00247.x.

Phillips, D. 2007. "Ethnic and Racial Segregation: A Critical Perspective." *Geography Compass* 1: 1138–1159. doi:10.1111/j.1749-8198.2007.00051.x.

Reardon, S. F., and D. O′-Sullivan. 2004. "Measures of Spatial Segregation." *Sociological Methodology* 34: 121–162. doi:10.1111/j.0081-1750.2004.00150.x.

Rosen, S. 1974. "Hedonic Prices and Implicit Markets: Product Di erentiation in Pure Com- Petition." *The Journal of Political Economy* 82: 34–55. doi:10.1086/260169.

Sieg, H., V. K. Smith, H. S. Banzhaf, and R. P. Walsh. 2004. "Estimating the General Equilibrium Benefits of Large Changes in Spatially Delineated Public Goods." *International Economic Review* 45: 1047–1077. doi:10.1111/j.0020-6598.2004.00297.x.

Wilson, W. J. 2012. *The Truly Disadvantaged: The Inner City, the Underclass, and Public Policy*. University of Chicago Press.

Wong, M. 2013. "Estimating Ethnic Preferences Using Ethnic Housing Quotas in Singapore." *The Review of Economic Studies* 80: 1178–1214. doi:10.1093/restud/rdt002.

Yalonetzky, G. 2012. "A Dissimilarity Index of Multidimensional Inequality of Opportunity." *Journal of Economic Inequality* 10: 343–373. doi:10.1007/s10888-010-9162-z.

Zhang, J., and L. Zheng. 2015. "Are People Willing to Pay for Less Segregation? Evidence from U.S. Internal Migration." *Regional Science and Urban Economics* 53: 97–112. doi:10.1016/j.regsciurbeco.2015.05.002.

Appendix

Table A1. Summary statistics for household demographics and housing unit attributes.

GROUPS	Hexp1000	Hhincome1000	College	Famsize	Age	Married	Male	Rooms	Builtage	Single	Own
Atlanta (5053)	21.080	116.639	0.575	2.569	39.317	0.489	0.507	6.485	29.240	0.608	0.547
Spanish (9.40%)	15.832	85.187	0.328	3.229	37.745	0.554	0.613	5.699	30.402	0.533	0.389
Hindi and related (2.65%)	25.916	133.581	0.821	3.343	40.485	0.836	0.784	6.284	19.187	0.575	

Table A3. Estimates of the willingness to pay for an older building.

VARIABLES	Atlanta	Chicago	Dallas
Hhincome1000	−3.252***	−4.675***	−2.664***
	(0.164)	(0.203)	(0.156)
College	−545.189***	−705.523***	−220.717***
	(36.352)	(47.113)	(33.670)
Famsize	−142.511***	−140.730***	−97.494***
	(13.478)	(17.228)	(12.997)
Age	−21.459***	−15.325***	−13.499***
	(1.663)	(2.158)	(1.530)
Married	−451.887***	−471.982***	−182.473***
	(41.694)	(52.459)	(39.153)
Male	−82.059**	−132.342***	43.730
	(33.984)	(42.978)	(31.577)
Spanish	552.782***	596.782***	−64.052
	(60.293)	(63.320)	(43.873)
Hindi and related	286.920***	76.473	−147.745
	(104.388)	(125.374)	(97.869)
Chinese	−400.119***	352.513**	131.751
	(143.370)	(171.568)	(130.022)
English-speaking non-white	754.405***	1,267.620***	83.121*
	(38.487)	(60.647)	(43.429)
Constant	−2,392.743***	−3,509.876***	−2,101.354***
	(78.894)	(100.412)	(69.852)
Observations	5,053	5,548	7,153
R-squared	0.399	0.353	0.134

Standard errors are in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Each column presents a separate ordinary least squares regression. The dependent variable is a migrant's willingness to pay per year (in dollars) for an increase from 10 to 35 years in the age of a housing unit $((\log(35) - \log(10)) \cdot \beta_{i,2})$, holding all other housing attributes constant. The omitted category is female white English speakers who are single and have not graduated from college. Annual household income is measured in thousands of dollars.

Table A4. Probit estimates of the demand for single detached houses.

VARIABLES	Atlanta	Chicago	Dallas
Hhincome1000	9.952***	11.23***	2.956***
	(0.798)	(0.824)	(0.42)
College	1025.801***	125.653	150.696*
	(140.648)	(154.09)	(84.366)
Famsize	1003.076***	1099.139***	274.881***
	(51.322)	(73.201)	(34.755)
Age	106.746***	61.614***	23.500***
	(6.594)	(7.185)	(3.907)
Married	2148.9***	1859.622***	576.255***
	(161.166)	(174.097)	(98.405)
Male	246.394*	585.02***	−26.401
	(127.764)	(140.055)	(78.856)
Spanish	−3157.475***	−2185.286***	−106.349
	(228.701)	(213.437)	(109.632)
Hindi and related	−2774.934***	−2690.828***	−136.263
	(388.068)	(414.83)	(247.22)
Chinese	−204.471	−3811.812***	−455.646
	(549.818)	(538.046)	(321.935)
English-speaking non-white	−2854.258***	−2806.349***	−276.519**
	(147.33)	(203.068)	(109.915)
Price of single detached unit	−1	−1	−1
Constant	−2997.641***	−1717.642***	−778.318***
	(328.627)	(393.534)	(190.542)
Pseudo-R2	0.425	0.411	0.101
Observations	5,053	5,548	7,153

Standard errors are in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Each column presents a separate probit estimate. The dependent variable is a dummy variable, "Single" equals 1 if the housing unit is single detached and 0 otherwise. P-values are reported in parentheses. The omitted category is female white English speakers who are single and have not graduated from college. Annual household income is measured in thousands of dollars, and the implicit price for single detached house is in dollars.

Table A5. Probit estimates of the demand for ownership.

VARIABLES	Atlanta	Chicago	Dallas
Hhincome1000	8.866***	7.873***	9.821***
	(0.798)	(0.583)	(0.797)
College	1762.106***	1050.408***	1823.097***
	(140.648)	(100.821)	(148.714)
Famsize	231.349***	164.193***	130.47**
	(51.322)	(37.62)	(57.139)
Age	63.020***	26.458***	56.343***
	(6.594)	(4.671)	(7.077)
Married	1540.468***	892.058***	1506.17***
	(161.166)	(113.78)	(173.705)
Male	303.647**	237.528***	161.916
	(127.764)	(91.787)	(136.388)
Spanish	−1955.127***	−118.354	−1042.531***
	(228.701)	(133.294)	(190.53)
Hindi and related	−1493.872***	−800.201***	−1096.082**
	(388.068)	(263.658)	(416.112)
Chinese	190.195	1982.427***	875.329
	(549.818)	(365.604)	(563.198)
English-speaking non-white	−2323.724***	−1034.745***	−1853.367***
	(147.33)	(131.638)	(195.448)
Price of ownership	−1	−1	−1
Constant	−170.800	−354.68	−574.561
	(328.627)	(225.602)	(369.757)
Pseudo-R2	0.396	0.266	0.230
Observations	5,053	5,548	7,153

Standard errors are in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Each column presents a separate probit estimate. The dependent variable is a dummy variable, "Own" equals 1 if the migrants own a home and 0 if they rent a home. *P*-values are reported in parentheses. The omitted category is female white English speakers who are single and have not graduated from college. Annual household income is measured in thousands of dollars, and the implicit price for a single detached house is in dollars.

Table A6. Estimates of the willingness to pay for a higher percentage of college educated households in the community.

VARIABLES	Atlanta	Chicago	Dallas
Hhincome1000	41.749***	43.954***	44.975***
	(1.878)	(1.589)	(1.883)
College	6,420.646***	5,917.598***	4,478.884***
	(417.165)	(369.591)	(405.706)
Famsize	1,960.873***	1,465.095***	2,778.890***
	(154.673)	(135.150)	(156.600)
Age	256.387***	156.794***	335.655***
	(19.086)	(16.930)	(18.438)
Married	5,405.325***	4,300.191***	9,077.404***
	(478.460)	(411.526)	(471.765)
Male	1,300.794***	1,058.294***	93.436
	(389.982)	(337.147)	(380.483)
Spanish	−8,906.960***	−4,114.947***	−9,574.449***
	(691.893)	(496.728)	(528.644)
Hindi and related	−4,836.778***	−2,745.227***	−7,673.110***
	(1,197.909)	(983.524)	(1,179.259)
Chinese	4,033.992**	−3,535.243***	−3,779.187**
	(1,645.251)	(1,345.902)	(1,566.690)
English-speaking non-white	−8,935.759***	−7,188.841***	−7,707.934***
	(441.661)	(475.758)	(523.291)
Constant	4,513.062***	8,781.568***	−77.853
	(905.358)	(787.706)	(841.676)
Observations	5,053	5,548	7,153
R-squared	0.439	0.393	0.432

Standard errors are in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Each column presents a separate ordinary least squares regression. The dependent variable is a migrant's willingness to pay per year (in dollars) for an increase from 10% to 35% of community members who are college graduates $((\log(35\%) - \log(10\%)) \cdot \beta_{i,9})$, holding all other housing attributes constant. The omitted category is female white English speakers who are single and have not graduated from college. Annual household income is measured in thousands of dollars.

Table A7. Estimates of the willingness to pay for more English-Speaking Whites.

VARIABLES	Atlanta	Chicago	Dallas
Hhincome1000	24.162***	−24.557***	−15.245***
	(1.014)	(1.101)	(0.989)
College	2,813.012***	−2,110.578***	−2,019.040***
	(225.245)	(255.984)	(213.151)
Famsize	740.000***	−1,360.476***	−847.295***
	(83.514)	(93.607)	(82.275)
Age	87.367***	−101.729***	−126.318***
	(10.305)	(11.726)	(9.687)
Married	1,938.159***	−2,805.249***	−3,154.375***
	(258.340)	(285.029)	(247.857)
Male	641.202***	−903.011***	−322.511
	(210.568)	(233.513)	(199.899)
Spanish	−3,934.502***	4,659.829***	2,675.413***
	(373.582)	(344.041)	(277.740)
Hindi and related	−2,104.006***	3,055.582***	−2,377.695***
	(646.801)	(681.203)	(619.562)
Chinese	2,262.545**	3,832.952***	−925.317
	(888.339)	(932.191)	(823.112)
English-speaking non-white	−3,377.422***	5,800.150***	1,054.712***
	(238.471)	(329.517)	(274.928)
Constant	−2,241.780***	−2,226.147***	5,457.354***
	(488.840)	(545.577)	(442.202)
Observations	5,053	5,548	7,153
R-squared	0.353	0.349	0.245

Standard errors are in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Each column presents a separate ordinary least squares regression. The dependent variable is a migrant's willingness to pay per year (in dollars) for an increase from 10% to 35% of community members who are white English speakers (that is, $WTP_{i,whiteEnglish}$), holding all other housing attributes constant. The omitted category is female white English speakers who are single and have not graduated from college. Both housing expenditure per year and annual household income are measured in thousands of dollars.

Table A8. Estimates of the willingness to pay for more Spanish speakers.

VARIABLES	Atlanta	Chicago	Dallas
Hhincome1000	0.598***	5.979***	18.563***
	(0.224)	(0.276)	(0.687)
College	44.564	559.404***	1,840.295***
	(49.785)	(64.087)	(147.978)
Famsize	293.639***	338.333***	1,011.669***
	(18.459)	(23.435)	(57.118)
Age	36.033***	32.481***	125.263***
	(2.278)	(2.936)	(6.725)
Married	666.096***	793.120***	3,316.319***
	(57.100)	(71.359)	(172.072)
Male	48.931	190.248***	45.930
	(46.541)	(58.462)	(138.777)
Spanish	−369.952***	−789.002***	−3,108.530***
	(82.572)	(86.133)	(192.818)
Hindi and related	−18.762	−631.121***	−2,141.112***
	(142.961)	(170.543)	(430.124)
Chinese	675.577***	−366.589	−1,368.369**
	(196.347)	(233.380)	(571.435)
English-speaking non-white	−450.904***	−815.180***	−2,547.028***
	(52.709)	(82.497)	(190.866)
Constant	−18.308	453.015***	−1,958.686***
	(108.047)	(136.588)	(306.994)
Observations	5,053	5,548	7,153
R-squared	0.241	0.329	0.449

Standard errors are in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Each column presents a separate ordinary least squares regression. The dependent variable is a migrant's willingness to pay per year (in dollars) for an increase from 10% to 35% of community members who are white English speakers (that is, $WTP_{i,Spanish}$), holding all other housing attributes constant. The omitted category is female white English speakers who are single and have not graduated from college. Both housing expenditure per year and annual household income are measured in thousands of dollars.

Table A9. Estimates of the willingness to pay for more Hindi and related and related language speakers.

VARIABLES	Atlanta	Chicago	Dallas
Hhincome1000	−19.319***	2.480***	−6.285***
	(0.855)	(0.226)	(0.575)
College	−2,571.580***	3.115	−83.504
	(189.994)	(52.470)	(123.939)
Famsize	−809.103***	277.330***	−251.029***
	(70.444)	(19.187)	(47.840)
Age	−97.259***	20.273***	−13.379**
	(8.692)	(2.404)	(5.633)
Married	−2,188.116***	710.776***	−528.970***
	(217.910)	(58.424)	(144.119)
Male	−555.511***	139.008***	124.444
	(177.614)	(47.865)	(116.233)
Spanish	4,006.173***	−700.033***	184.307
	(315.117)	(70.520)	(161.495)
Hindi and related	2,051.493***	−547.779***	2,986.104***
	(545.577)	(139.630)	(360.250)
Chinese	−1,809.808**	−1,704.680***	1,590.744***
	(749.315)	(191.077)	(478.606)
English-speaking non-white	3,642.603***	−1,353.623***	1,141.516***
	(201.150)	(67.543)	(159.860)
Constant	2,226.035***	1,370.644***	−447.846*
	(412.338)	(111.830)	(257.123)
Observations	5,053	5,548	7,153
R-squared	0.405	0.267	0.066

Standard errors are in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Each column presents a separate ordinary least squares regression. The dependent variable is a migrant's willingness to pay per year (in dollars) for an increase from 10% to 35% of community members who are white English speakers (that is, $WTP_{i,Hindi}$), holding all other housing attributes constant. The omitted category is female white English speakers who are single and have not graduated from college. Both housing expendit.1&Y&Y&1&99@DD&2YY1

Table A11. Estimates of the willingness to pay for more English-Speaking nonwhites.

VARIABLES	Atlanta	Chicago	Dallas
Hhincome1000	1.722***	10.284***	−9.255***
	(0.340)	(0.448)	(0.446)
College	887.165***	1,188.717***	−1,083.698***
	(75.566)	(104.275)	(96.182)
Famsize	−145.803***	362.393***	−359.065***
	(28.018)	(38.131)	(37.126)
Age	−15.989***	22.939***	−49.645***
	(3.457)	(4.777)	(4.371)
Married	−110.554	711.239***	−1,261.855***
	(86.669)	(116.107)	(111.843)
Male	96.668	314.343***	−60.695
	(70.642)	(95.122)	(90.202)
Spanish	−957.048***	−1,759.454***	1,791.227***
	(125.330)	(140.145)	(125.327)
Hindi and related	31.366	−724.609***	56.917
	(216.991)	(277.489)	(279.571)
Chinese	177.875	−1,262.758***	−366.496
	(298.023)	(379.729)	(371.421)
English-speaking non-white	−1,550.863***	−2,317.273***	1,143.740***
	(80.003)	(134.229)	(124.059)
Constant	−384.865**	538.168**	−615.765***
	(163.998)	(222.241)	(199.539)
Observations	5,053	5,548	7,153
R-squared	0.157	0.309	0.285

Standard errors are in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. Each column presents a separate ordinary least squares regression. The dependent variable is a migrant's willingness to pay per year (in dollars) for an increase from 10% to 35% of community members who are white English speakers (that is, $WTP_{i,Englishnonwhite}$), holding all other housing attributes constant. The omitted category is female white English speakers who are single and have not graduated from college. Both housing expenditure per year and annual household income are measured in thousands of dollars.