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Abstract

In this research I attempt to model and investigate the housing decisions of Spanish-speaking migrants. I use methods developed by Bajari and Kahn (2002) to obtain willingness to pay measurements for the migrant groups in samples drawn from three major California cities. I then apply these results to several hypotheses that attempt to describe current migration patterns of Hispanics into increasingly segregated communities characterized by high levels of crowding, low educational attainment, and high levels of Spanish speakers. This research finds that spoken language plays a significant role in a migrant's decision process. Spanish-speaking migrants demonstrate a significant preference for locating in communities with higher levels of Spanish speakers. They demonstrate a large relative distaste for living neighborhoods with high levels of human capital – as measured by the percentage of college graduates, as well as significantly lower valuations for the amount of space in a housing unit – measured by the number of rooms. The spatial assimilation hypothesis finds significant support within the results, indicating that more assimilated Spanish speakers will continue to emigrate from language enclaves. These results will offer insights into the creation and growth of Hispanic language enclaves in the U.S.

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I. Introduction

Census 2000 saw the emergence of the Hispanics as the dominant minority group with a population of 35,305,818 (12.5% of total population). This change speaks of the impressive growth exhibited by the Hispanic population between 1990 and 2000. In 1990, they represented only 22,354,059 or 9% of the total population. Why is this significant? In a single decade, Hispanics grew as a population by a whopping 13,000,000 people, representing a population percentage increase of 58%! More interesting perhaps, is the question of where this growth is focused. Census data indicates that the Hispanic population is highly concentrated in California, along the Texas-Mexico border, in Florida and New York. Hispanics, as a population, demonstrate a tendency to cluster together, live in more crowded conditions, and reside in neighborhoods characterized by low-levels of education. These observations seem to imply that Hispanics have a unique set of preferences that, combined with other factors, yield the observed concentrations of Hispanics in Western central cities.[1]

In order to better understand why Hispanics are choosing to cluster together it is necessary to present a model of housing demand. In this research, I implement a flexible model of housing demand described and tested in Bajari and Khan (2002). This model will allow for the recovery of individual taste parameters for housing characteristics such as the amount of space and types of neighborhoods in which they are located. I estimate this model for three individual Metropolitan Statistical Areas within Southern California, chosen for their observed concentrations of Hispanics. These individual taste parameters can then be regressed across demographics to yield the joint distribution of tastes and demographics. This exercise encourages a broader understanding of how individual level demographics can affect tastes. The empirical results will enable the testing of several hypotheses that attempt to explain location patterns and preferences of Hispanic migrants. These hypotheses will focus on the preferences of Spanish-speaking migrants and attempt to explain their tastes for housing and neighborhood characteristics, as well as offer insights as to how these tastes change across demographics within this group.

The rapid creation and growth of highly concentrated Spanish language enclaves, often called "barrios", is inspiring concern over the effects of such neighborhoods on their inhabitants. An example of such clustering can be observed in Santa Ana, California. Santa Ana is the largest city in Orange County, with a population of 337,977 in 2000 that is comprised of 76.1% Hispanics. Nearly 180,000 or 53.3% are foreign-born and of these, 153,000 were from Latin America. One can also see how spoken language may be vital in explaining Hispanic preferences. Out of the population five years of age and over, 211,000 residents speak Spanish and of those, 138,000 speak English less than "very well." The average household size in Santa Ana is 4.55 – one of the highest in the nation! This compares to a statewide average of 2.87 and a national average of 2.59. Crowding is also a huge issue in Santa Ana as over 50.3% of residents live in "crowded" conditions and 36.9% live in "severely crowded" conditions.[2] Another key characteristic is the level education, or lack thereof. More than 56.8% of the population over 25 years have less than a high school degree and only 9.2% have attained a bachelor's degree or higher.[3] While Santa Ana is a somewhat extreme example of an immigrant community, it highlights several key issues that may provide us with insights into the Hispanic housing decision as well as problems that may arise due to heavy concentrations of Spanish speakers and recent immigrants.

Economic and Sociological studies have been attempting to describe the effects of racial segregation on communities and cities since John F. Kain proposed that racial segregation in housing markets had adverse effects on black employment in 1968.[4] In its strict form, Kain's spatial mismatch hypothesis states that blacks are subject to adverse employment outcomes due to housing segregation which in turn reduces employment information and increases transportation costs. In an analysis of the effects of ghettos on blacks, Cutler and Glaeser (1995) find that in racially segregated cities, blacks have lower high school graduation rates, and higher levels of unemployment coupled with lower overall incomes. Contrastingly, there exists a smaller body of literature that points out positive effects of racial segregation. Wilson (1987) argues that decreased racial segregation leads to increased segregation by education and income. In effect, wealthier and more highly educated blacks will emigrate from ghettos given free mobility – thus reducing the presence of positive role models for segregated blacks.

While there is a substantial literature on the spatial separation of blacks and whites within inner cities, the literature on Hispanic populations, especially given their significance and demonstrated growth patterns, is not as extensive. Importantly, the black-white case may not directly apply to that of Hispanics - especially given the prevalence of immigrants within the Hispanic populace (38% in 2000). Krivo (1995), finds that immigration plays a key role in explaining relatively low levels of homeownership and high household crowding for each of four large Hispanic populations (Mexicans, Puerto Ricans, Cubans, and other Hispanics). According to Krivo, the analysis frequently implemented in the black-white model doesn't take into account variables that are uniquely responsible for explaining the social position of immigrant-origin populations. Take, for example, the role of language. Within the Hispanic community, where conversations and transactions are frequently carried out in Spanish rather than English, language becomes a key variable.

In this research I focus on the housing decisions of Spanish-speaking migrants in order to test hypotheses that attempt to explain the observed characteristics of Hispanic communities. Previous work on immigration and the effects of English language proficiency on wage rates motivate the choice of language as a sorting variable. Chiswick and Miller (1995) find that the effect of English fluency for immigrants within the United States is a 16.9% higher wage earnings rate.[5] These findings of a positive effect of English fluency on wage rates are echoed by McManus (1985) in a study of Hispanic wages. McManus estimated that in 1980, the present value of not acquiring fluency for non-English-fluent Hispanic males to be a cost of $36,000. Additionally, Chiswick and Miller report that minority-language enclaves have a greater depressing effect on destination language fluency among immigrants with the lowest levels of fluency - those who have recently arrived, are less well educated, and who immigrate at an older age. Given the findings above, one would expect Spanish-speaking migrants to avoid locating in communities with high concentrations of Spanish speakers in order to speed assimilation. This leads us to our first hypothesis.

Hypothesis 1: Spanish-speaking migrants will seek to avoid communities with high levels of Spanish-speakers in order to speed the assimilation process.

However, a substantial body of immigration literature describes communities with large minority populations as networks that reduce the cost of migration for new immigrants by providing employment, shelter, and protection. Massey et al. (1993) define migrant networks as “sets of interpersonal ties that connect migrants, former migrants and non migrants in origin and destination areas through ties of kinship, friendship, and shared community origin."[6] In an investigation of the effects of language enclaves on Hispanics, McManus (1990) finds that large enclaves lower the earnings return to English fluency and provide better jobs for persons lacking skills in English. Lazear (1999) presents a model of sorting, in which individuals who are not fluent in the majority language seek out communities in which their native language is spoken in order to facilitate trade. Lazear describes every interaction among individuals who share the same language as resulting in a trade and notes that if an individual is located in a society where few share his or her language, they will be forced to assimilate - else they will receive no gains from trade. Therefore, the size of the minority language group within a community is critical; if the minority language group is large enough, members can avoid absorbing the costs of assimilating towards the dominant group. These studies motivate the alternative hypothesis that Spanish-speaking migrants will demonstrate a preference for communities with high levels of Spanish speakers.

Hypothesis 2: Spanish-speaking migrants choose to locate in communities with high levels of Spanish-speakers to receive positive network effects, lower transaction costs, and better employment opportunities.

Hypotheses (1-2) deal directly with the question of whether Spanish-speaking migrants prefer to live in communities characterized by high levels of Spanish speakers. Another significant characteristic of language enclaves such as Santa Ana is the presence of extremely low levels of education. A study by Grenier (1984), finds that Hispanic males whose mother tongue is Spanish have lower returns to education than Hispanics whose mother tongue is English. Grenier's analysis indicates that Spanish-speaking migrants will place lower importance on the education levels present within communities. Lazear's framework predicts that Spanish speakers will gain significantly less from being surrounded by highly educated individuals than non-Spanish speakers. This derives from the fact that in the model, individuals must share the same language to facilitate trade – hence a Spanish speaker gains little from being surrounded by highly educated individuals (assuming that the majority of college graduates speak English). The lower returns to education for Spanish speakers combined with their inability to accrue gains from interacting with highly educated neighbors, motivates Hypothesis 3.

Hypothesis 3: Spanish-speaking migrants will place a lower valuation on the level of education present within a community.

Examining the neighborhood preferences of Spanish-speaking migrants will offer insights into their decision process, however the choice of housing is multifaceted. To understand the housing preferences of this migrant group we need to know how they value different physical housing attributes as well as aspects such as ownership and city/suburban residence. In order to interpret these measures and create a framework from which one can draw conclusions regarding Spanish speakers' housing preferences I draw from the *spatial assimilation* model.[7] Spatial assimilation theory argues that a large part of the process of socioeconomic advancement for minorities can be related to the integration with mainstream society through residential location. It points out that many aspects of individual life are directly related to where one is located, including the quality of education, social status, exposure to crime, and access to employment. The theory predicts the integration of minorities into neighborhoods that reflect their level of assimilation and economic status. Thus, we will examine the preferences of Spanish-speaking migrants for a wide variety of housing and neighborhood characteristics, controlling for various measures of assimilation, in an effort to explain certain aspects prevalent in Spanish-language enclaves. In this process we will be able to test the viability of the spatial assimilation model within a willingness to pay framework.

Hypothesis 4: Spanish-speaking migrants with higher household incomes and education levels, who are further along in the life cycle, will possess higher valuations of those attributes that reflect elevated socioeconomic status.

In this research, I extract individual willingness to pay measurements for certain neighborhood and housing characteristics. These measurements will allow me to test Hypotheses (1-4). Results of these tests will offer insights into the rapid transformation of many cities with high levels of Hispanic migration. I describe the data used in my empirical tests in Section 2. In Section 3, I specify a model for the migrant's utility function and describe the vector of demographics that enter into my estimation. I present my results in Section 4 and discuss their significance in relation to my proposed hypotheses as well as future migration patterns. Section 5 concludes.

II. The Data

The data was drawn from the 1990 Census of Population and Housing Integrated Public Use Microdata 1% metropolitan sample. In this paper, I focus on large metropolitan areas within Southern California as they posses high levels of Hispanic migration as well as pre-existing Hispanic communities.[8] I selected three metropolitan statistical areas (MSA's) from which to draw my observations: Los Angeles – Long Beach MSA, Anaheim – Santa Ana –Garden Grove MSA, and the San Diego MSA. I treat each of the three MSA's as unique data sets and run separate regressions and empirical tests on each MSA.

In my samples, I begin by evaluating the entire sample populations for each individual MSA. I use Public Use Microdata Areas (PUMAs) to geographically divide each MSA. PUMAs are used to divide MSA's over 200,000 people into 100,000+ person geographic units.[9] For each PUMA, I can then calculate PUMA specific neighborhood attributes such as the percent of college graduates or the percent of Spanish speakers. Next, I identify the family household heads within the data to generate the descriptive statistics for each MSA.

Table 1 lists the summary statistics for both the overall and migrant population household heads within the Los Angeles –Long Beach, Anaheim-Santa Ana-Garden Grove, and San Diego MSA's. I choose to separate the populations and migrant groups by the ability to speak Spanish. By isolating both the Spanish-speaking and non-Spanish speaking segments one can see the demographic differences between the two populations. I focus on recent migrants in the empirical work that follows due to the fact that households that migrate are more likely to be consuming their optimal housing bundle. This derives from the concept that non-migrant households might have been deterred from moving and consuming their optimal housing bundle by high transaction costs associated with relocation. Therefore, I describe migrant households as households that have moved during the previous five years.

Spanish-speaking household heads within the sample are characterized by low levels of college graduation, lower incomes, large household sizes, and are more predominantly male than their non-Spanish-speaking counterparts. Both sets of migrants on average possess lower incomes, are younger, and are less likely to be married than non-migrants. The household sizes of Spanish-speaking household heads are at least one and a half times larger than those of non-Spanish-speaking households. Spanish-speaking household heads are also 3-5 times less likely to possess college degrees. It is important to note that the yearly income differential between Spanish-speaking and non-Spanish-speaking migrants ranges from $16,700 in the LA-Long Beach MSA to $11,700 in the San Diego MSA.

I create random samples of 2000 migrants for each MSA. I will use these samples in the estimation of the model described in the following section. The summary statistics for the samples are listed in Table 2. The statistics in Table 2 are consistent with the descriptive data presented on the overall migrant populations. However, it is important to note that on average Spanish-speaking migrants live in communities with two times the number of Spanish speakers than non-Spanish-speaking migrants and are half as likely to own their homes. Table 2 also demonstrates that, in absolute monetary terms, non-Spanish speaking households consume more housing than their Spanish-speaking counterparts. This data provides a brief overall picture of the two migrant groups, however my goal is to examine individual household preferences and to accomplish this we must specify a model of housing demand.

III. The Housing Demand Model and its Estimation

In this section, I describe and implement the methodology presented in Bajari and Kahn (2002) for modeling housing demand for individual households and capturing willingness to pay across different demographic groups for specific housing and neighborhood attributes.[10] The methodology implements a three-step estimation procedure, which I describe here.

A. A Model of Housing Demand

A primary goal of this work is to accurately measure the value that certain households place on different housing and neighborhood attributes. In order to accomplish this task, I first must generate a hedonic that maps the price of a housing unit to both its physical and neighborhood attributes as well as to attributes that are unobserved by the econometrician but observed by the consumer. Thus, I include the following physical attributes in the model: the number of rooms and the age of the unit, as well as two dummy variables to indicate ownership and if the unit is a single-detached home. The percent of college graduates, the percent of Spanish speakers, and whether the PUMA is located in the center city are the community characteristics observed within the hedonic. I also allow for the presence of an unobserved product attribute ε_j.

The model contains 2000 households *i*, and 2000 housing units *j* for each MSA. Thus, the implicit prices faced by household$_i$ when choosing $j^*(i)$ are satisfied locally by

$$P_j = \alpha_{0,J^*} + \alpha_{1,j^*} \log(room_j) + \alpha_{2,j^*} \log(ageunit_j) + \alpha_{3,j^*}(own_j) + \alpha_{4,j^*}(single_j) + \alpha_{5,j^*} \log(percentBA_j) + \alpha_{6,j^*} \log(percentSpanSpk_j) + \alpha_{7,j^*}(city_j) + \log(\varepsilon_j)\,. \quad (1)$$

Equation 1 maintains the hedonic assumption that the unobserved product attribute ε_j is independent of the observed product characteristics. While one would expect that, in practice, unobserved attributes will likely be correlated with observed characteristics, the standard exogeneity assumption is maintained here.

Household *i*'s utility is determined as a function of its consumption of housing and a composite commodity. It is written as

$$u_{i,j} = u_i(x_j, \varepsilon_j, c) \qquad (2)$$

where x_j is the vector of observed housing and neighborhood characteristics associated with housing unit *j*, ε_j represents the unobserved product characteristic, and c represents the composite commodity normalized to one dollar.

By substituting the household's budget constraint into equation (2) we can see that for a given housing unit *j**(*i*), the unit is utility maximizing for household$_i$ if

$$j^*(i) = \arg\max_j u_i(x_j, \varepsilon_j, (y_i - P(x_j, \varepsilon_j)) \cdot \qquad (3)$$

For a continuous housing characteristic $x_{j,k}$ of a utility maximizing housing unit *j**, the following first order condition holds:

$$\frac{\partial u_i(x_{j^*}, \varepsilon_{j^*}, y_i - p_{j^*})}{\partial x_{j,k}} - \frac{\partial u_i(x_{j^*}, \varepsilon_{j^*}, y_i - p_{j^*})}{\partial c} \frac{\partial P(x_{j^*}, \varepsilon_{j^*})}{\partial x_{j,k}} = 0 \qquad (4)$$

$$\frac{\dfrac{\partial u_i(x_{j^*}, \varepsilon_{j^*}, y_i - p_{j^*})}{\partial x_{j,k}}}{\dfrac{\partial u_i(x_{j^*}, \varepsilon_{j^*}, y_i - p_{j^*})}{\partial c}} = \frac{\partial P(x_{j^*}, \varepsilon_{j^*})}{\partial x_{j,k}}. \qquad (5)$$

Equation (5) depicts the condition that the marginal rate of substitution between the composite commodity and a continuous characteristic is equal to the partial derivative of the hedonic with respect to that characteristic. This condition will be crucial in the derivation of individual willingness to pay measurements. These measurements represent the necessary change in the consumption of the composite commodity to hold individual utility constant following a change in the consumption of a continuous characteristic – holding all other characteristics constant.

The nature of the Census data used in this study prevents one from recovering the global identification of preferences. Since the data represents a single cross section of households, equation (5) indicates that household preferences will be identified locally. Thus, I implement the following specification for consumer preferences, which follows directly from the substitution of equation (1) into equation (2):

$$u_{i,j} = \beta_{i,1}\log(room_j) + \beta_{i,2}\log(ageunit_j) + \beta_{i,3}(own_j) + \beta_{i,4}(single_j) + \beta_{i,5}\log(percentBA_j) + \beta_{i,6}\log(percentSpanSpk_j) + \beta_{i,7}(city_j) + \beta_{i,8}\log(\varepsilon_j) + c \quad (6)$$

where

$$\beta_i = f(demographics_i) + \eta_i \quad (7)$$

$$\mathrm{E}(\eta_i \mid demographics_i) = 0 \,. \quad (8)$$

In this parametric model, individual household level preference parameters $\beta_{i,1} - \beta_{i,8}$ are written as functions of household demographics and a household specific residual, η_i .

My set of demographics consists of the age of the household head, sex, marital status, whether he or she is a college graduate and whether their first language is Spanish, the total household income and the household size. Since, on average, Spanish-speaking households tend to earn less than non-Spanish-speaking households, income is extremely important in the model in order to avoid associating less-satisfactory outcomes with linguistic background rather than income differentials. The presence of children in a household is often found to be a strong indicator of homeownership.[11] I predict that education will be a key variable, especially when combined with spoken language, in explaining the disparity in housing preferences for Spanish speakers. The logic behind this follows from the fact that the homeownership process requires significant interaction with numerous parties, including banks, agents, loan companies, property managers, etc. This necessarily involves communication, which may be hindered by poor English ability and low levels of education. Spanish speakers could therefore find themselves limited to renting due to their inability to function effectively in the housing market.

The next step in the model is to describe the identification of individual household taste parameters $\beta_{i,1} - \beta_{i,8}$. We can use the specification for individual utility provided in equation (6) to rewrite equation (4) as

$$\frac{\beta_{i,k}}{x_{j^*,k}} = \frac{\partial P(x_{j^*}, \varepsilon_{j^*})}{\partial x_{j,k}} \quad (9)$$

$$\beta_{i,k} = x_{j^*,k} \frac{\partial P(x_{j^*}, \varepsilon_{j^*})}{\partial x_{j,k}} \quad (10)$$

Note again that the coefficient on the composite commodity is normalized to one. Thus, one can identify the population distribution of $\beta_{i,k}$ in equation (10) as we observe the amount of the characteristic consumed $x_{j^*,k}$ and posses estimates of the implicit prices described in equation (1). These individual specific taste parameters can only be calculated for the continuous housing characteristics.

In order to identify the taste parameters for discrete characteristics such as ownership and central city residence it is necessary make parametric assumptions. Without these assumptions I can only recover a bound for the discrete taste parameters.

In example, suppose that one observes a household *i* choosing their optimal housing bundle *j**. Now, define $\hat{x}_i$ as a vector of observed characteristics of x_{j*}, where *own* = 1 indicates ownership. Next, define $\tilde{x}_i$ as an equivalent vector, with the exception that now *own* = 0. Thus, we can see that the implicit price for ownership that household *i* faces is

$$\frac{\Delta P}{\Delta own} = P(\hat{x}_i, \varepsilon_j) - P(\tilde{x}_i, \varepsilon_j). \quad (11)$$

Equation (11) tells us that we can estimate the price that individual houses for discrete characteristics by looking at differences in prices between otherwise identical housing bundles. Household *i*'s preferences for ownership are then bounded by the following inequalities.

$$[own = 0] \Rightarrow \left[\beta_{i,3} < \frac{\Delta P}{\Delta own}\right] \quad (12)$$

$$[own = 1] \Rightarrow \left[\beta_{i,3} > \frac{\Delta P}{\Delta own}\right] \quad (13)$$

Equation (12) demonstrates the situation when household *i*'s preference parameter for ownership is less than the implicit price described in equation (11), in this case we expect household *i* not to consume this characteristic. Alternatively, equation (13) points to the case when household *i*'s preference parameter exceeds the implicit price for ownership.

In the following model, I assume that the discrete characteristics $\beta_{i,k}$ are normally distributed with a mean dependent on the demographic characteristics described above and an unknown variance. For a discrete characteristic *k*,

$$\beta_{i,k} = h(d_i, \theta_k) + \eta_{i,k} \tag{14}$$

$$h(d_i, \theta_k) = \theta_0 + \sum_{own} \theta_{own} d_{i,o} \tag{15}$$

Here, $d_i = (d_{i,o})$ is a vector of household *i*'s demographic characteristics and θ_k is a vector of parameters. The term $\eta_{i,k}$ represents an i.i.d. taste shock to household *i* for the discrete characteristic *k*. If $\eta_{i,k}$ is normally distributed and characterized with mean zero and a standard deviation σ, it is possible to model the probability that a household *i* = 1, ..., 2000 chooses to own their optimal housing bundle *j**. This probability is represented in the equation:

$$\left(1 - G(h(d_i, \theta_k) - \frac{\Delta P}{\Delta own}; \sigma)\right). \tag{16}$$

Drawing on equation (16), one can derive the likelihood function for the population distribution of tastes for each of the discrete characteristics. This likelihood function is depicted as follows:

$$L(\theta, \sigma) = \prod_{i=1}^{2000} G(h(d_i, \theta_k) - \frac{\Delta P}{\Delta own}; \sigma)^{1-ownj^*_{(i)}} (1 - G(h(d_i, \theta_k) - \frac{\Delta P}{\Delta own}; \sigma))^{ownj^*_{(i)}}. \tag{17}$$

Equation (17) is estimated for each discrete characteristic individually using maximum likelihood. The exponents included in equation (17), $ownj^*_{(i)}$ and $1 - ownj^*_{(i)}$ are indicator variables, which take on the values of one and zero respectively when household *i* chooses ownership. In the case of the other discrete characteristics, their observed consumption is inserted into these indicator variables.

B. Estimating the Model

Now, we are ready to employ the model of housing demand described in the previous subsection in conjunction with the city samples. The first step in this procedure is to estimate equation (1) in order to attain the implicit prices for the housing and neighborhood characteristics. The second step is to use equation (10) to obtain individuals' preference parameters for continuous housing characteristics. The third step is to generate the joint distribution of tastes and demographics. I obtain the joint distribution for continuous characteristics by regressing the household level preference parameters derived in the second step across demographic characteristics using a simple linear regression model. For the discrete characteristics we can estimate equation (17) using maximum likelihood.

I apply local linear methods described in Fan and Gijbels (1996) in order to estimate the implicit prices that face households choosing their optimal housing bundle $j*$. This approach applies the linear regression technique locally, thus placing larger weights on observations nearer to the optimal bundle. In essence, it allows for the estimates of a unit's implicit prices to be generated from a set of similar observations versus examining the entire sample. The size of the area around our observation that is incorporated into the regression is called the bandwidth. I follow the approach implemented in Bajari and Kahn (2002) and use weighted least squares with a normal kernel function and a bandwidth of 3 to estimate $\alpha_{0,j*} - \alpha_{7,j*}$. The estimates of implicit prices allow one to recover the unobserved product characteristic for each unit $j*$.

Since we observe the implicit prices of our observed characteristics as well as the observed level of consumption and the actual price, it is a simple exercise to obtain the hedonic residual, which was earlier specified as our unobserved product attribute ε_{j*}.

Upon estimating the implicit prices faced by each household *i*, for housing and community attributes, I can generate estimates of individual household preference parameters for the continuous characteristics using equation (10). Given that I observe the quantity $x_{j*,k}$ of an attribute that is consumed and possess estimates of the implicit prices for each attribute, I can solve for the household's preference parameters $\beta_{i,k}$. At this stage, I posses a full set of individual household implicit prices and preference parameters for each of the three MSA's. Next, I model the joint distribution of tastes and demographics.

For continuous housing characteristics, I use a linear regression model to obtain the distribution of tastes across demographic characteristics described by equations (7-8). By regressing these preference parameters on demographics, I reveal the differences in taste for continuous characteristics across demographics. I choose not to present these results; rather, in Section 4, I measure the differences in willingness to pay for shifts in the levels of consumption of housing characteristics across demographics.

Next, I address the estimation of the discrete characteristics, which are not identified by equation (10). I estimate equation (17) using maximum likelihood in order to obtain the population distribution of tastes for discrete characteristics. I present these results along with the results for the continuous characteristics in the form of willingness to pay measurements and test my hypotheses in the following section.

IV. Results

I apply the methodology presented in Section 3 to each city samples in order to test several hypotheses regarding preferences of Spanish-speaking migrants. I first calculate the consumption of housing characteristics across my samples with respect to migrant demographics. Then, I generate willingness to pay measurements for each housing and neighborhood characteristic. Next, these measurements are regressed on household demographics to yield the distribution of tastes for each sample.

I present reduced form evidence on housing consumption across the demographic characteristics for each of the city samples in Table 3. These results offer a snapshot of the different levels of housing consumption for different demographic groups. Household head demographic characteristics such as age, language, sex, marital status, as well as household income and household size are controlled for within each regression. Table 3 consists of 21 separate OLS regressions that effectively regress the consumption of housing or neighborhood characteristics on the above demographics. These regressions yield several interesting results. Across the three cities, holding other demographic factors constant, Spanish speakers consume .84 to 1.03 less rooms than non-Spanish speakers.[12] This is particularly surprising given the descriptive statistics presented earlier in Table 2, where Spanish-speaking migrants demonstrated household sizes that were at least 1.5 times larger across all three samples. Spanish-speaking migrants also live in neighborhoods with 7%-15% more Spanish speakers, are 10%-18% less likely to reside in single-detached housing, are 4%-28% more likely to reside in the central city, and are 8-14% less-likely to be homeowners.

A. Demand for Spanish-Speaking Neighbors – Hypotheses (1-2)

In order to test the hypothesis that Spanish-speaking migrants prefer to locate in neighborhoods that are characterized by high concentrations of Spanish speakers, I construct a willingness to pay measurement for a change in the level of Spanish speakers from 10%-35% within a community. Following Bajari and Kahn's methodology, I let $WTP\%SPANSPK_i$ denote household i's willingness to pay for an increase in the percent of Spanish speakers in a neighborhood.

$$WTP\%SPANSPK_i = \beta_{6,i}(\log(.35) - \log(.10))$$

Holding other characteristics constant, one can calculate the monetary amount necessary to hold individual household utilities constant, given a change in the percent of Spanish speakers present within a community. The results of this calculation are then regressed on household demographics and presented in Table 4. Across all three cities Spanish speakers demonstrate a preference for higher levels of Spanish speakers, willing to pay from \$60-\$427 for the increase. The largest result comes from the Los Angeles – Long Beach MSA, where Spanish-speaking migrants are willing to pay an extra \$427 to live with more of their peers.

The coefficients on the Spanish speaking variable in Table 4 present empirical support for Hypothesis 2 - which stated that Spanish-speaking migrants would seek to locate in communities with high levels of Spanish speakers in order to receive positive network effects, lower transaction costs, and better employment opportunities. The logic behind the willingness to pay argument used throughout this section is that if a characteristic is truly important to a household's welfare, one should observe a high willingness to pay for the characteristic in question. The positive and significant coefficients for Spanish-speaking migrants in this case could arise from a number of factors, including the ability of language enclaves to shelter non-native speakers and reduce the importance of English proficiency in wage rates. They could also reflect the importance of social networks in providing employment opportunities and reducing daily transaction costs.

Table 4 also includes several variables to describe the interaction effects between Spanish speakers and income, age, and higher education. The interaction variables provide further evidence against Hypothesis 1, as Spanish speakers with higher levels of assimilation as described by income, education, and age are willing to pay the most to avoid such neighborhoods. In example, a college educated Spanish speaker would be willing to pay $552 (-417+(-135)) to avoid such an increase; likely a reflection of the large wage differential between English and non-English speaking college graduates. Hypothesis 1 would predict that the largest potential for gains from integration would arise in individuals who are younger, possessing lower levels of education, and lower household incomes. This prediction arises from the fact that language enclaves have the greatest depressing effect on English fluency for these individuals. In this model, English fluency drives higher wage rates and thus corresponds with higher lifetime incomes.

Another interesting aspect of the results in Table 4 is that while Spanish speakers in each MSA demonstrate positive coefficients, the magnitudes vary significantly across MSA's. Reduced form evidence in Table 3 reveals that in the Los Angeles - Long Beach MSA, which demonstrated by far the largest willingness to pay measurement, Spanish speakers live in communities with 15% more Spanish speakers than their non-

Spanish speaking counterparts - nearly two times the numbers displayed by fellow MSA's. The concentrations of Spanish speakers within this MSA were also much higher than the other two samples, with levels rising as high as 87% in some neighborhoods. The different observed magnitudes in Table 4 provides support for the concept that enclave size does matter, indicating higher returns for Spanish speakers locating in more highly concentrated neighborhoods.

B. Demand for Highly Educated Peers – Hypothesis 3

Table 4 demonstrated the willingness to pay for Spanish speakers within a community, however the effects, while statistically significant and supportive, are of relatively small magnitudes in comparison with those accompanying a community's percent of college graduates. In the introduction, I presented results from the literature that demonstrated that Spanish speakers have lower returns to education than those who speak English. While this result is not surprising, it is important to consider when analyzing the data on willingness to pay for college educated neighbors presented in Table 5.

In Table 5, migrant willingness to pay for an increase in the percentage of college graduates from 10%-30% is calculated and then regressed across demographic characteristics. Holding income and other demographics constant, Spanish-speaking migrants are willing to pay $438 to $1052 less for the additional college graduates. These coefficients represent empirical support for Hypothesis 3, which predicted that Spanish-speaking migrants would place lower valuations on the levels of highly educated persons within communities. College graduates on the other hand are willing to pay between $407 and $1077 more than non-college graduates in order to live in a community with the higher level of college graduates – all else equal. In Bajari and Khan's (2000) analysis they obtain similar measurements demonstrating a relative distaste of black migrants towards more highly educated communities and a relative preference of college graduates for such communities. They use these findings to offer a partial justification for black urbanization that calls on higher existing levels of college graduates in suburbs to explain a sorting of highly skilled individuals into the suburbs and blacks into central cities. Both sets of results indicate that blacks and Spanish-speakers likely have lower expected returns from highly educated neighbors and are therefore less willing to pay for such neighbors.

C. Spatial Assimilation Theory and Implications – Hypothesis 4

In an effort to provide a cohesive view of the different data I present in this research, I employ a test of the spatial assimilation hypothesis across each of the housing and neighborhood characteristics. The inclusion of the three interaction variables for Spanish speakers in the regressions will offer a broader perspective of the preferences of this group. While standard tests of the spatial assimilation hypothesis usually look to actual outcomes and consumption patterns, looking at this hypothesis from a willingness to pay perspective will allow for the specification of taste changes across assimilation measures. The theory predicts the integration of minorities into neighborhoods that reflect their level of assimilation and economic status. Assuming that the housing market is run competitively, the measures of willingness to pay will have consumption indications.

In this research, neighborhood characteristics include the level of college graduates and the level of Spanish speakers. The spatial assimilation hypothesis indicates that Spanish speakers possessing higher levels of income and education, who are further along in the life cycle, should demonstrate preferences for neighborhoods with high levels of college graduates and low levels of Spanish speakers. The statistically significant interaction coefficients in Table 4 (level of Spanish speakers) unambiguously support Hypothesis 4. Table 5 possesses mixed results. The interaction between Spanish speakers and college graduates produces the expected signs - depicting the high valuations placed on the level of education present in a neighborhood for this group. However, age seems to have a negative effect on the valuation of the level of education in a neighborhood. While this result runs counter to the spatial assimilation hypothesis, it makes intuitive sense when one thinks about the shorter period in which elder individuals have to capitalize on their gains from this exposure. The literature also tells us that the acquisition of fluency in English becomes more difficult over time. Omitting the interaction of age and Spanish speaking, the results in Table 5 generally run inline with Hypothesis 4. These two sets of results demonstrate strong indicators that the spatial assimilation theory holds for at least the set of neighborhood characteristics. Next, we can look at the consumption of physical housing attributes.

A significant factor that characterizes neighborhoods with high levels of Spanish speaker is a high occurrence of overcrowding. In Section 2, we notice that on average Spanish-speaking migrants have household sizes roughly 1.5 times larger than non Spanish-speaking migrants. The reduced form results in Table 3 demonstrate that, holding all else constant, Spanish-speakers consume approximately 1 room less than their counterparts. These initial findings correspond directly with previous research on the topic. Myers, Baer, and Choi (1996) find that Hispanics and Asians have markedly higher rates of overcrowding and that the discrepancy is even greater for recent immigrants. They present the argument that Asian and Latin American communities are "close contact" societies and find that their data reveals a persistence in crowding among Asian and Hispanic households with incomes more than twice the average of all households.

Table 6 shows that income, marriage, household size, and college education have a positive effect on how much a general household is willing to pay for the increase in space. The results demonstrate that Spanish-speaking migrants are willing to pay $629 to $1023 less than non Spanish-speaking migrants.[13] This is a considerable difference. Referring now to the interaction effects, we return our focus to the spatial assimilation model. Again, we find strong empirical support for the reflection of improved station in the relative taste parameters. The coefficients on the interaction of education and age with Spanish speakers unanimously demonstrate the positive effects these two characteristics have on taste parameters for space. Interestingly, in correspondence with the findings of Myers, Baer, and Choi (1996) the interaction of income with Spanish speaking seems to have an indistinguishable effect on preferences.

Table 7 and Table 8 present household willingness to pay estimates for single-detached housing and central city residence. Given that Spanish speakers reside predominantly in city centers and single-detached housing is generally found in suburbs, the analysis of these factors may provide insights into the observed pattern of migration.[14] Table 7 shows that Spanish-speaking migrants are willing to pay significantly lower amounts to live in single-detached housing across all three samples. The difference is most pronounced in the Los Angeles –Long Beach MSA, where Spanish-speaking migrants are willing to pay $822 less than non-Spanish speakers to live in single-detached units. Table 8 offers willingness to pay estimates for central city residence. In each of the samples, Spanish-speaking migrants are willing to pay more to live in central city residences, with the largest effect ($389) in the San Diego MSA.

Analyzing the interaction results in Table 7 and 8 one finds further support for the spatial assimilation hypothesis. The interaction results in Table 7 all indicate, with exception of the interaction of income in the San Diego MSA, that more highly assimilated Spanish speakers will pay more to obtain single-detached housing. The interaction effects in the case of central city residence are mixed. However, the full set of results reflects that central city areas, as defined in the census data, may have desirable traits in San Diego and Los Angeles - Long Beach. Thus, the mixed effects may represent geographic definitions within the data sets. Furthermore, note the relatively low statistical significance of all the interaction results in Table 8.

In the final set of data shown in Table 9, I present willingness to pay measurements for housing ownership.[15] Spanish speakers demonstrate significantly lower valuations of this attribute. In the Anaheim - Garden Grove - Santa Ana MSA they are willing to pay $3083 less than their non-Spanish speaking counterparts to own housing. The interactions yield that in each city the combination of age and Spanish speakers have positive effects on the desire for ownership. Within the Los Angeles - Long Beach MSA and the Anaheim-Garden Grove-Santa Ana MSA, the interaction effects generally have the sign intimated by the spatial assimilation hypothesis. In each of the housing characteristics discussed, one found considerable support indicating that as Spanish speakers attained higher levels of assimilation, as described by age, income, and education, their taste parameters shifted accordingly.

V. CONCLUSIONS

Since the repeal of the immigrant origins quota system in 1965 the levels of Hispanic immigration have grown rapidly. This demographic group has demonstrated strong growth through both immigration and life-cycle effects over the last three decades. I attempt to explain the location patterns of Spanish-speaking migrants through an understanding of their consumption preferences. In order to attain measures by which I can describe relative preferences, I estimate the three-step process described in Bajari and Khan (2002). With these results I construct willingness to pay measurements for the characteristics that enter my model of housing demand. Through the willingness to pay measurements I test Hypotheses (1-4).

My estimates reveal that Spanish-speaking migrants demonstrate a preference for neighborhoods with higher concentrations of Spanish speakers. This finding directly supports Hypothesis 1, which indicates that Spanish-speaking migrants choose to reside in communities with higher levels of Spanish speakers in order to obtain higher returns for their skill sets, information regarding employment, or positive effects from social networks. These migrants are also much less willing to pay for highly educated neighbors, implying that they have lower returns to education or are unable to capture the benefits of residing in a high human capital environment. Reduced form regressions and willingness to pay estimates jointly explain the observed levels of crowding within this demographic group. On average, Spanish-speaking migrants posses household sizes at least 1.5 times larger than their counterparts while consuming approximately 1 less room per household. They are also significantly less willing to pay for an increase in space. Spanish-speaking migrants demonstrate a relative preference for central city residence and are much less willing to pay for ownership and single-detached dwellings.

Given that suburban housing tends to be larger and is composed of predominantly single-detached dwellings, one can recognize that the observed preferences of Spanish speakers will lead them towards central city residence.

The analysis of the interaction effects of Spanish speaking with age, income, and education demonstrates strong overall support for the spatial assimilation hypothesis. In the context of examining location patterns, these results imply that more highly assimilated Spanish-speakers will seek to consume a housing bundle that reflects their level of assimilation. This process would see wealthier and more highly educated Spanish speakers immigrate from urban language enclaves into suburban single-detached dwellings.

Taken together, the results above present a convincing argument based on willingness to pay measures that explains the current concentrations of Spanish speakers in central cities, residing in crowded quarters characterized by low levels of homeownership and higher densities of Spanish speakers. This research indicates that Spanish-speaking migrants with low levels of assimilation will continue to seek out language enclaves and thus, we can expect continued population growth of Spanish speakers within pre-existing enclaves.

Footnotes:

[1] This research focuses on the location decision of Spanish-speaking migrants and while recognizing that discrimination in the housing and credit markets is likely present to some degree, I do not focus here on such effects.

[2] "Crowded" is defined as more than 1 person per room and "severely crowded" is defined as more than 1.5 persons per room.

[3] All descriptive statistics presented on Santa Ana were taken from the U.S. Census Bureau's website. www.census.gov.

[4] John F. Kain. "Housing Segregation, Negro Employment, and Metropolitan Decentralization." *The Quarterly Journal of Economics*, Vol. 82, pp. 175-197. 1968.

[5] In their analysis, Chiswick and Miller estimate the return on labor market earnings for a non-fluent immigrant to obtain fluency to be 17%-34%.

[6] These connections constitute a unique form of social capital that can provide access to foreign employment opportunities, living situations, and cultural support. (Massey et al., 1994; Mines, 1981).

[7]See Massey and Denton (1985).

[8] I also investigated several metropolitan areas within Texas, but chose to focus on California due to its larger migrant pools.

[9] http://www.ipums.org/usa/hgeographic/pumaa.html

[10] See Bajari and Khan (2002) for an in depth description of the methods implemented in this section.

[11]Lauren Krivo's analysis of Hispanic households found that it has less of an effect for Hispanics than their Anglo counterparts.

[12]Bajari and Kahn (2002), whose work this paper is closely related to, find in a comparative analysis on blacks and whites that blacks consume only .2 to .28 less rooms than whites in their samples.

[13] Note the reflection of observed consumption in Table 3 with the revealed preference results in Table 6.

[14] In general, one can expect that city centers are characterized by a more intense use of land with fewer detached housing opportunities.

[15] I choose not to include willingness to pay results for the age of unit as I find that the effects are minimal across demographics.

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Table 1:Demographic Means for Populations and Migrant Populations:

	Los Angeles- Long Beach				Anaheim-Santa Ana-Garden Grove				San Diego			
	Non-Spanish Speakers	Non-Spanish - Speaking Migrants	Spanish Speakers	Spanish Speaking Migrants	Non-Spanish Speakers	Non-Spanish - Speaking Migrants	Spanish Speakers	Spanish Speaking Migrants	Non-Spanish Speakers	Non-Spanish-Speaking Migrants	Spanish Speakers	Spanish-Speaking Migrants
Age	48.6509	40.1740	41.6822	36.0615	47.2031	40.3426	40.2703	35.6547	47.4801	40.5885	42.4887	37.5644
College Graduate	0.3089	0.3541	0.0706	0.0811	0.3387	0.3514	0.1008	0.1124	0.2922	0.3059	0.1350	0.1354
Household Income	49441.6706	48116.6840	33432.0202	31414.4006	56937.7020	54939.7856	42311.6221	40565.5928	45412.0195	43570.7583	34083.0562	31838.9625
Male	0.6541	0.6634	0.7289	0.7257	0.7065	0.7086	0.7907	0.7964	0.6868	0.6905	0.7182	0.7210
Household Size	2.3928	2.4041	3.9254	3.8910	2.5091	2.4642	4.1754	4.1319	2.3835	2.3682	3.5685	3.5351
Married	0.5040	0.4698	0.6210	0.5949	0.5857	0.5431	0.6967	0.6840	0.5569	0.5213	0.6079	0.5775
Migrant	0.4709	1	0.5325	1	0.5218	1	0.5950	1	0.5699	1	0.6039	1
Reside in City	0.4737	0.4861	0.4897	0.5169	0.1548	0.1554	0.4903	0.4853	0.4931	0.4908	0.5192	0.5122
Home Owner	0.5638	0.3859	0.3617	0.2256	0.6572	0.4838	0.4167	0.2899	0.5898	0.4271	0.4177	0.2773
Single Unit	0.5581	0.4070	0.4571	0.3422	0.5511	0.3953	0.4457	0.3127	0.5431	0.4112	0.4680	0.3458
Rooms	4.8533	4.3550	3.6615	3.3086	5.4203	4.9060	4.1647	3.8827	5.1389	4.7580	4.2808	3.9967
Age of Unit	32.7034	27.7972	34.1483	30.3345	21.3393	18.0307	25.2762	22.4528	22.1444	18.1181	25.0064	22.2561

Notes: The raw data is from the U.S. Census of Population and Housing 1% Metropolitan Sample. This sample includes all household heads.

Table 2: Summary Means for Migrants Included in Structural Estimation

	Los Angeles- Long Beach		Anaheim-Santa Ana-Garden Grove		San Diego	
	Non-Spanish-Speaking Migrants	Spanish-Speaking Migrants	Non-Spanish-Speaking Migrants	Spanish-Speaking Migrants	Non-Spanish-Speaking Migrants	Spanish-Speaking Migrants
Age	40.5079	36.6790	40.5041	36.1418	40.8282	37.1654
College Graduate	0.3354	0.0724	0.3487	0.0957	0.3041	0.1535
Household Income	48069.5243	32944.3618	54480.4226	40122.6879	43340.3368	31001.8504
Male	0.6537	0.7403	0.6985	0.7872	0.6901	0.7205
Household Size	2.4620	3.8423	2.4878	4.1383	2.3144	3.4646
Married	0.4750	0.6030	0.5407	0.6631	0.5057	0.5472
Reside in City	0.4880	0.4935	0.1624	0.4929	0.5040	0.4921
Home Owner	0.3977	0.2078	0.4907	0.2624	0.4330	0.2717
Single Unit	0.4086	0.3358	0.4063	0.2837	0.4181	0.3386
Rooms	4.3710	3.3191	4.9313	3.9326	4.7652	3.9488
Community % Spanish Speaking	0.2078	0.3994	0.1244	0.2396	0.1131	0.2109
Community % College Graduate	0.3081	0.2013	0.3269	0.2464	0.2960	0.2243
Age of Unit	28.0363	28.9249	18.0556	22.1082	18.1031	22.9508
Annual Housing Expenditure	11934.5091	8335.1660	13684.4448	10212.7713	10834.2430	7979.0079

Notes: The raw data is from the U.S. Census of Population and Housing 1% Metropolitan Sample; each city sample consists of 2000 migrants drawn at random. Annual housing expenditure for renters is simply monthly rent times twelve, for owners I use the reported price of the home multiplied by 7.5%.

Table 3: Descriptive OLS Regressions of Migrant Housing Choice

Los Angeles - Long Beach	Rooms	Age of Unit	Single Unit-Detached	Home Owner	Central City Residence	Community % College Graduate	Community % Spanish Speaking
Constant	2.5816	30.1096	0.0072	-0.0531	0.6413	0.2990	0.2180
Household Income	0.0197	-0.0216	0.0034	0.0039	-0.0005	0.0007	-0.0008
College Graduate	0.1116	1.3908	-0.0462	0.0597	0.0320	0.0628	-0.0465
Spanish Speaking	-0.9851	1.1425	-0.1114	-0.1382	0.0405	-0.0564	0.1485
Household Size	0.1758	-0.1130	0.0457	0.0108	-0.0197	-0.0172	0.0165
Age	0.0065	-0.0238	0.0012	0.0034	-0.0011	-0.0001	0.0003
Married	0.4253	-1.7686	0.1243	0.1716	-0.0791	0.0029	-0.0189
Male	-0.1405	0.8875	0.0479	-0.0055	-0.0141	-0.0009	-0.0025
R2	0.3160	0.0050	0.1830	0.2300	0.0220	0.2470	0.2520
Anaheim - Santa Ana - Garden Grove	Rooms	Age of Unit	Single Unit-Detached	Home Owner	Central City Residence	Community % College Graduate	Community % Spanish Speaking
Constant	2.8062	20.6979	-0.0968	-0.1526	0.2198	0.3167	0.1454
Household Income	0.0167	-0.0310	0.0032	0.0035	-0.0012	0.0004	-0.0004
College Graduate	0.2718	-2.9190	0.0618	0.1353	-0.0465	0.0267	-0.0180
Spanish Speaking	-1.0321	2.1439	-0.1785	-0.1422	0.2841	-0.0573	0.0943
Household Size	0.2008	0.4718	0.0666	0.0074	0.0080	-0.0069	0.0059
Age	0.0102	-0.0184	0.0017	0.0075	-0.0004	0.0000	-0.0003
Married	0.5384	-1.6087	0.1028	0.1631	-0.0015	0.0096	-0.0075
Male	-0.1202	0.7199	0.0244	-0.0082	0.0305	-0.0109	0.0115
R2	0.2860	0.0350	0.2200	0.2460	0.1000	0.1190	0.1380
San Diego	Rooms	Age of Unit	Single Unit-Detached	Home Owner	Central City Residence	Community % College Graduate	Community % Spanish Speaking
Constant	2.3477	21.7586	-0.0445	-0.1689	0.6730	0.2947	0.1058
Household Income	0.0181	-0.0423	0.0029	0.0035	-0.0003	0.0003	-0.0002
College Graduate	0.4133	-0.6688	0.0768	0.1304	0.1466	0.0447	-0.0233
Spanish Speaking	-0.8367	4.3034	-0.0969	-0.0815	0.0022	-0.0489	0.0783
Household Size	0.2967	-0.0439	0.0563	0.0016	0.0020	-0.0107	0.0121
Age	0.0144	-0.0240	0.0018	0.0073	-0.0024	0.0000	0.0000
Married	0.3635	-4.7569	0.1137	0.1905	-0.1243	0.0023	-0.0080
Male	0.0735	2.7077	0.0731	0.0163	-0.0614	-0.0039	-0.0034
R2	0.3280	0.0380	0.1810	0.2510	0.0430	0.1180	0.1390

This table presents results from twenty-one reduced form OLS regressions. In the regressions, housing consumption measures are regressed on demographics. Household income is measured in thousands of 1989 dollars and the dependent variables "College Graduate," "Spanish Speaking," "Married," and "Male" are dummy variables set to one if the household head satisfies their conditions. Thus, the base case is representative of a female, non-Spanish speaking, non-college graduate, who is not married. There are 2000 observations in each regression.

Table 4: Estimates of Willingness to Pay for Increase in Spanish Speakers (10%-35%)*
(t-statistics in parentheses)

	Anaheim-Garden Grove-Santa Ana	Los Angeles-Long Beach	San Diego
Constant	381.649	744.011	30.461
	(38.190)	(11.513)	(4.712)
Household Income	0.198	-1.873	-0.176
	(2.914)	(-4.032)	(-3.452)
College Graduate	-5.760	-134.649	-6.477
	(-1.010)	(-3.379)	(-1.626)
Spanish Speaking	102.475	427.294	59.605
	(4.473)	(3.943)	(3.709)
Household Size	2.430	73.909	-8.242
	(1.350)	(7.359)	(-6.129)
Age	0.074	2.118	-0.343
	(0.408)	(1.729)	(-2.999)
Married	-1.358	-2.703	-7.777
	(-0.203)	(-0.068)	(-1.716)
Male	4.171	-11.929	-3.714
	(0.658)	(-0.322)	(-0.916)
Spanish Speaking *	-0.751	1.317	-0.042
Income	(-3.455)	(1.282)	(-0.238)
Spanish Speaking *	6.510	-416.762	-25.339
College Graduate	(0.265)	(-3.342)	(-1.802)
Spanish Speaking *	-0.438	0.893	-1.277
Age	(-0.786)	(0.344)	(-3.258)
R-Squared	0.046	0.197	0.074
Observations	2000.00	2000.00	2000.00

*Each column of the table presents results from separate OLS regressions. The dependent variable is a migrant's willingness to pay per year for an increase of Spanish speakers from 10%-35%, holding all other housing product characteristics constant. T-statistics are reported beneath coefficient estimates in shaded rows. The omitted category is a non-Spanish speaking, non-college graduate, who is female and not married. Household income is measured in 1,000s of 1989 dollars.

Table 5: Estimates of Willingness to Pay for Increase in College Graduates (10%-30%)*

****(t-statistics appear in parentheses)**

	Anaheim-Garden Grove-Santa Ana	Los Angeles-Long Beach	San Diego
Constant	3664.400	4352.665	3053.624
	(31.078)	(20.660)	(35.258)
Household Income	6.694	24.390	4.164
	(8.343)	(16.105)	(6.090)
College Graduate	407.245	1077.382	452.736
	(6.054)	(8.293)	(8.485)
Spanish Speaking	-1051.683	-999.012	-437.952
	(-3.891)	(-2.828)	(-2.034)
Household Size	-71.934	-238.084	-93.202
	(-3.387)	(-7.272)	(-5.173)
Age	5.136	4.400	2.649
	(2.395)	(1.102)	(1.727)
Married	228.595	366.371	83.802
	(2.902)	(2.843)	(1.380)
Male	-138.993	-63.080	-20.259
	(-1.859)	(-0.522)	(-0.373)
Spanish Speaking * Income	1.588	-7.653	2.275
	(0.619)	(-2.285)	(0.955)
Spanish Speaking * College Graduate	49.352	686.526	38.927
	(0.170)	(1.688)	(0.207)
Spanish Speaking * Age	5.021	-1.209	-4.290
	(0.763)	(-0.143)	(-0.817)
R-Squared	0.163	0.336	0.151
Observations	2000.00	2000.00	2000.00

*Each column of the table presents results from separate OLS regressions. The dependent variable is a migrant's willingness to pay per year for an increase of college graduates from 10%-30%, holding all other housing product characteristics constant. T-statistics are reported beneath coefficient estimates in shaded rows. The omitted category is a non-Spanish speaking, non-college graduate, who is female and not married. Household income is measured in 1,000s of 1989 dollars.

Table 6: Estimates of Willingness to Pay for Increase in Rooms (4-6)*

(t-statistics in parentheses)

	Anaheim-Garden Grove-Santa Ana	Los Angeles-Long Beach	San Diego
Constant	1031.040	1094.617	915.317
	(13.210)	(12.414)	(10.789)
Household Income	11.397	10.664	12.161
	(20.315)	(17.773)	(18.157)
College Graduate	35.194	207.987	280.104
	(0.731)	(4.134)	(5.359)
Spanish Speaking	-635.105	-1023.449	-628.651
	(-4.853)	(-5.062)	(-2.981)
Household Size	86.486	115.064	170.882
	(7.130)	(7.244)	(9.683)
Age	3.203	7.085	10.369
	(2.165)	(4.417)	(6.890)
Married	251.375	344.114	275.633
	(5.266)	(5.842)	(4.635)
Male	-57.415	-57.909	57.186
	(-1.282)	(-1.035)	(1.075)
Spanish Speaking *	-1.610	0.319	-1.269
Income	(-1.297)	(0.166)	(-0.544)
Spanish Speaking *	428.355	466.384	140.801
College Graduate	(2.844)	(2.149)	(0.763)
Spanish Speaking *	3.463	8.845	3.163
Age	(1.103)	(1.798)	(0.615)
R-Squared	0.354	0.333	0.358
Observations	2000.00	2000.00	2000.00

*Each column of the table presents results from separate OLS regressions. The dependent variable is a migrant's willingness to pay per year for an increase from 4 - 6 rooms in a housing unit, holding all other housing product characteristics constant. T-statistics are reported beneath coefficient estimates in shaded rows. The omitted category is a non-Spanish speaking, non-college graduate, who is female and not married. Household income is measured in 1,000s of 1989 dollars.

Table 7: Estimates of Willingness to Pay Single-Detached Housing*

(t-statistics in parentheses)

	Anaheim-Garden Grove-Santa Ana	Los Angeles-Long Beach	San Diego
Constant	3352.087	540.643	2046.803
	(13.685)	(2.276)	(14.467)
Household Income	6.005	13.337	4.429
	(12.423)	(12.088)	(10.805)
College Graduate	143.005	-108.429	88.575
	(3.950)	(-1.301)	(3.244)
Male	-4.046	129.235	78.429
	(-.096)	(1.630)	(2.745)
Household Size	80.748	127.663	42.116
	(6.950)	(6.193)	(4.496)
Age	5.674	4.306	4.694
	(4.593)	(1.659)	(5.715)
Married	255.555	475.500	220.898
	(5.866)	(5.768)	(6.995)
Spanish Speaking	-621.509	-821.816	-229.306
	(-3.743)	(-3.442)	(-1.873)
Spanish Speaking * Income	1.702	1.847	-0.405
	(.983)	(.731)	(-.308)
Spanish Speaking * College Graduate	87.963	408.469	23.735
	(.574)	(1.601)	(.253)
Spanish Speaking * Age	6.835	5.582	2.466
	(1.835)	(1.011)	(.840)
Price of Single	-1.000	-1.000	-1.000
	(-17.367)	(-9.990)	(-19.101)
Observations	2000.000	2000.000	2000.000

*Each column of the table presents results from separate maximum likelihood estimations. Note that the Price of Single is normalized to –1. The statistics presented here were generated through a probit estimation of single on demographics with an inclusion of the estimate for the price of single-detached housing. I then divide through by the coefficient of the price of single. The omitted category is a non-Spanish speaking, non-college graduate, who is female and not married. Household income is measured in 1,000s of 1989 dollars.

Table 8: Estimates of Willingness to Pay for City Residence*

(t-statistics in parentheses)

	Anaheim-Garden Grove-Santa Ana	Los Angeles-Long Beach	San Diego
Constant	-427.897	118.205	1225.343
	(-8.140)	(1.055)	(3.796)
Household Income	-0.035	-1.932	-1.543
	(-.185)	(-2.442)	(-.595)
College Graduate	3.299	20.291	1074.943
	(.262)	(.318)	(5.377)
Male	-0.191	-31.077	-454.543
	(-.019)	(-.525)	(-2.257)
Household Size	-1.794	-39.692	30.229
	(-.690)	(-2.460)	(.447)
Age	-0.145	-3.231	-17.286
	(-.378)	(-1.659)	(-3.034)
Married	-5.603	-211.436	-898.400
	(-.536)	(-3.329)	(-3.988)
Spanish Speaking	44.345	154.778	388.543
	(1.463)	(.880)	(.487)
Spanish Speaking *	-0.495	-2.470	-5.771
Income	(-1.119)	(-1.517)	(-.63066)
Spanish Speaking *	-10.837	58.179	186.029
College Graduate	(-.287)	(.289)	(.261)
Spanish Speaking *	-0.070	3.188	-5.371
Age	(-.112)	(.764)	(-.277)

Price of City	1.000	1.000	1.000
	(8.508)	(4.505)	(1.122)
Observations	2000	2000	2000

*Each column of the table presents results from separate maximum likelihood estimations. Note that the Price of City is normalized to 1. The statistics presented here were generated through a probit estimation of city on demographics, with an inclusion of the estimate for the price of central city housing. I then divide through by the absolute value of the price of city coefficient. The omitted category is a non-Spanish speaking, non-college graduate, who is female and not married. Household income is measured in 1,000s of 1989 dollars.

Table 9: Estimates of Willingness to Pay for Ownership*

(t-statistics in parentheses)

	Anaheim-Garden Grove-Santa Ana	Los Angeles-Long Beach	San Diego
Constant	-4249.292	4220.588	1406.620
	(-3.887)	(-6.610)	(3.726)
Household Income	58.833	19.963	19.489
	(12.855)	(13.174)	(13.105)
College Graduate	1695.375	287.738	512.489
	(5.638)	(2.795)	(6.061)
Male	-216.292	-7.525	125.913
	(-0.634)	(-.073)	(1.433)
Household Size	124.958	38.250	41.554
	(-1.268)	(1.433)	(1.417)
Age	94.625	13.413	25.391
	(9.668)	(4.201)	(10.214)
Married	2096.500	710.438	604.978
	(5.821)	(6.700)	(6.260)
Spanish Speaking	-3083.167	-1404.100	-835.717
	(-2.188)	(-4.101)	(-2.163)
Spanish Speaking *	0.875	6.175	-5.000

Income	(0.0614)	(1.662)	(-1.194)
Spanish Speaking *	-85.167	376.825	-72.935
College Graduate	(-0.068)	(1.097)	(-.245)
Spanish Speaking *	22.917	8.463	13.196
Age	(0.744)	(1.149)	(1.547)
Price of Ownership	-1.000	-1.000	-1.000
	(-4.591)	(-10.358)	(-10.759)
Observations	2000	2000	2000

*Each column of the table presents results from separate maximum likelihood estimations. Note that the Price of Ownership is normalized to -1. The statistics presented here were generated through a probit estimation of ownership on demographics with an inclusion of the estimate for the price of ownership. I then divide through by the absolute value of the price of ownership coefficient. The omitted category is a non-Spanish speaking, non-college graduate, who is female and not married. Household income is measured in 1,000s of 1989 dollars.

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[1] This research focuses on the location decision of Spanish-speaking migrants and while recognizing that discrimination in the housing and credit markets is likely present to some degree, I do not focus here on such effects.

[2] "Crowded" is defined as more than 1 person per room and "severely crowded" is defined as more than 1.5 persons per room.

[3] All descriptive statistics presented on Santa Ana were taken from the U.S. Census Bureau's website. www.census.gov.

[4] John F. Kain. "Housing Segregation, Negro Employment, and Metropolitan Decentralization." *The Quarterly Journal of Economics*, Vol. 82, pp. 175-197. 1968.

[5] In their analysis, Chiswick and Miller estimate the return on labor market earnings for a non-fluent immigrant to obtain fluency to be 17%-34%.

[6] These connections constitute a unique form of social capital that can provide access to foreign employment opportunities, living situations, and cultural support. (Massey et al., 1994; Mines, 1981).

[7]See Massey and Denton (1985).

[8] I also investigated several metropolitan areas within Texas, but chose to focus on California due to its larger migrant pools.

[9] http://www.ipums.org/usa/hgeographic/pumaa.html

[10] See Bajari and Khan (2002) for an in depth description of the methods implemented in this section.

[11] Lauren Krivo's analysis of Hispanic households found that it has less of an effect for Hispanics than their Anglo counterparts.

[12] Bajari and Kahn (2002), whose work this paper is closely related to, find in a comparative analysis on blacks and whites that blacks consume only .2 to .28 less rooms than whites in their samples.

[13] Note the reflection of observed consumption in Table 3 with the revealed preference results in Table 6.

[14] In general, one can expect that city centers are characterized by a more intense use of land with fewer detached housing opportunities.

[15] I choose not to include willingness to pay results for the age of unit as I find that the effects are minimal across demographics.