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Housing Preferences of Asian and Hispanic/Latino Immigrants in the United States:

A Melting Pot or Salad Bowl

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*Abstract: S*everal factors affecting household formations of first-and second-generation Asian and Hispanic/Latino immigrants are identified, including contextual social interaction effects. Using household data from the American Housing Survey (AHS) and Public Use Micro-data Sample (PUMS), we find that first-generation Asian and Hispanic/Latino immigrants are more likely to live in co-residence households; and this is influenced by immigrant gender, age, education, income, employment and density. Education and income are inversely related to co-residing, while higher immigrant density increases the propensity to co-reside. Contextual effects reveal that neighborhoods with a relatively large Caucasian average household size increases co-residence behavior among immigrants; and, the income of Caucasians living in the area is inversely related to immigrant co-residing behavior. Second-generation Asian immigrants are more likely to live independently, while second-generation Hispanic/Latino immigrants have a higher propensity to co-reside, however they are influenced contextually by geographic household and income patterns. We further specify findings by considering local housing price, the fusion of immigrants in the U.S., agglomeration of immigrants in central city, and a comparison between immigrants in U.S. and similarly aged natives in China. Our results are robust to potential sample-selection bias, and social interaction boundary selection bias.

Key words: Immigrants; Co-residence; Asian, Hispanic, Social interaction; Residential;

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Introduction

Since the beginning of the twenty-first century, the United States has seen a substantial increase in immigration – particularly from Asian and Hispanic countries. According to the U.S. Census Bureau Population Division, immigrants[4] are estimated to comprise 21.64 percent of the U.S. population, or 66.81 million in 2013. Hispanic and/or Latinos represent the largest minority group, accounting for 14.52 percent to 17.08 percent of the population from 2005 to 2013. And, Hispanics/Latinos accounted for 56% of U.S. population growth between 2000 and 2010; and now comprise the largest minority group (Passel Cohn, and Lopez, 2011). Asians represented 5.01 percent of the U.S. population in 2013 and are the U.S.'s third largest minority, only behind Latinos/Hispanics, and African Americans. Figure 1 illustrates the population growth of different U.S. racial groups from 2005 to 2013.

The influx of immigration and related racial diversification in the U.S. is shaping the nation's urban geography, bringing unique identities to cities and neighborhoods. Future levels of immigration represent the biggest wildcard in projecting future household growth (McCue, et al, 2015). Housing tenure decisions made by immigrants and their families have a measurable impact on the U.S. housing market, especially with recent Latino/Hispanic and Asian immigrants. It is important to explore household formation preferences of these two racial groups as they are the largest groups immigrating to the U.S. Both share similar collective family cultures, and household formations are likely to differ from traditional U.S. households. These cultural differentials will impact housing demand and thus housing stock, potentially contributing to the observed contemporaneous subdued level of household formations among the culturally diverse millennial generation.[5]

Hispanic and Latino culture dictates strong support for close family and living in multi-generational family

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[4] According to the United States Census Bureau, immigrants are defined as anyone who was not a U.S. citizen at birth, including those who have become U.S. citizens through naturalization.

[5] The Joint Center for Housing Studies "State of the Nation's Housing 2014" reports that an increasing share of the millennial generation in their 20's and 30's tend to live with their parents.

arrangements (Burr.et al, 2013). Because of an emphasis on collectivity, harmony and responsibility, cooperation among the group tends to be emphasized more than individual function (Gudykunst, 1998). Their household size is large, with an average family size of 3.92 people - greater than that of the U.S. population average, 3.22 people (American Community Survey, 2008). Similarly, intergenerational support is a bedrock of Asian family and society. In traditional Asian families, the younger generation is dependent on previous generations relying on elders for housing, with the prospect of eventual inheritance. In Chinese urban households, for example, 45% of elderly parents reside with children 25 years old or older (Choukhmane, et al. 2013), which differs from typical U.S. housing preferences. In the U.S., the percent of adult children living with their parents decreases drastically after age 24 to about 6 percent in the mid- to late 30s according to the Joint Center for Housing Studies (JCHS) at Harvard University.[6] Co-residence behavior is quite prevalent and deeply embedded in both Asian and Hispanic/Latino culture, and can be quite persistent even as Asians and Hispanics migrate from their home country to the host country (U.S. in this study).

In 2013, 32% of U.S. housing units were occupied by minorities, with Hispanic or Latinos and Asians owning 14.68 million and 4.75 million housing units, respectively; thereby occupying 12.67% and 4.1 percent of U.S. owner occupied units (Figure 2). Foreign-born immigrant demand for residential real estate is an important factor contributing to housing growth. Harvard's JCHS (2014) estimates that foreign-born share of U.S. household growth is close to 40% and is having a 'buoying-up' effect on housing demand – primarily because of low overall housing growth. Minorities, including Asians and Hispanics, are expected to account for about 76% of household growth in the 2015 to 2025 time period. The Bipartisan Policy Center reports immigration is responsible for more than one-third of U.S. housing growth demand, and is expected to increase over the next few decades, highlighting the increasing role of immigrant preferences

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[6] Joint Center for Housing Studies (2014) "State of the Natiosn's Housing 2014," Harvard University. Available at: http://www.jchs.harvard.edu/sites/jchs.harvard.edu/files/sonhr14_txt_bw-full.pdf.

on housing stock.[7] It is also estimated that second-generation immigrants will account for as much as two-thirds of the 1995 to 2050 U.S. population growth (Day, 1992). This large influx of immigrants and their children will have an enormous impact on the U.S. and its population in various ways (Dail, 2009, Corwin, 2012). Immigrant preferences and choices will largely impact America society, including the residential real estate market.

Given the expected contribution of first- and second-generation immigrants to U.S. population growth and household formations, an understanding of their housing behavior and preferences signifies an important area of research. The results from this study provide insight into policy implications, and much needed analysis on immigrant housing formation and tenure preferences. This study examines Asian and Hispanic first- and second-generation immigrant housing preferences identifying several factors shaping their household formations, (1) notable differences between first- and second-generation immigrants, (2) neighborhood and contextual effects, (3) income, education, employment status and duration disparity, and (4) a geographic immigrant density effect. It is inevitable that immigrants will interact with the local host (native) population. Considering this important issue, a co-residence choice model conditional on contextual social interactions similar to linear social interactions models by Blume, Brock, Durlauf and Jayaraman (2015) are employed. This study differentiates by applying unobservable family culture into household formation behavior; studying household formations of first- and second-generation immigrants and exploring the distinct differences (and similarities) between Asian and Hispanic immigrants who share similar collective family culture. Moreover, we focus on the effect of immigrants' contextual interactions with native Caucasian U.S. citizens (i.e. majority population).

Employing household data from the American Housing Survey (AHS) and Public Use Micro-data Sample (PUMS), we find first-generation Asian and Hispanic or Latino immigrants prefer to live in co-residence

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[7] Bipartisan Policy Center (BPC) (2014) "Immigration and Housing: Supply, Demand, and Characteristics" Available at: http://bipartisanpolicy.org/library/immigration-and-housing-supply-demand-and-characteristics/

multi-generational family households, and this preference is not substantially conditioned on length of time in the U.S. Factors such as gender, age, geographic location, local contextual effects, income, education, and employment, do, however, seem to influence immigrant household co-resident behavior. Second-generation Asian immigrants tend to behave more similarly to non-Asian native born U.S. citizens. In contrast, second-generation Hispanic immigrants seem to preserve their original intergeneration co-resident living culture; however this observed differential is mitigated with income parity. Further, considering local housing costs, the fusion of immigrants in U.S., and location selection bias, our results are consistent in that second-generation Asian immigrants' household behavior tends to resemble native born U.S. citizens. This observed behavior is different from second-generation Hispanic/Latinos, as they still keep co-residence preferences of their parents' home country – although subdued, and ameliorated with income parity. Insights from this study help us gain a more comprehensive understanding of first- and second-generation Asian and Hispanic immigrant housing attitudes and demand, and the substantial influences of contextual and economic characteristics. Given the level of their expected contribution to the growth in U.S. housing demand and supply, these findings are notable and opportune.

The paper is organized as follows. In the next section, we provide a literature review followed by a description of the data and empirical models used to test our hypotheses. In the fourth section we discuss primary results and robustness. The fifth section provides policy implications regarding immigrants' house ownership rate changes and housing tenure choice. The conclusion follows thereafter.

Literature Review

Many studies examine house ownership differentials in the U.S. between immigrant groups and Caucasians (Alba and Logan, 1992; Krivo, 1995; Coulson, 1999; Painter et al., 2004; Yu, 2006; Wachter and Megbolugbe, 1992; Megbolugbe and Cho, 1996; Haurin and Rosenthal, 2009; Cortes et al., 2007; DeSilva and Elmelech, 2012). These studies generally document significant disparities between racial groups. Although Hispanic and Asian immigrants, the largest groups of homeowners among immigrants, prefer to

own (rather than rent) over time, Coulson (1999) finds that house ownership rates of Hispanic- and Asian-American households (second-generation immigrants) are significantly less than that of other demographic groups in the U.S. – even after accounting for income and other potential covariates. Recently, however, Borjas, (2002) and Painter and Yu (2010) find immigrants catch-up with native-born residents regarding house ownership rates within a couple of decades in the U.S.

The current literature largely analyzes the house ownership rate gap between immigrants and Caucasians by associating house ownership with level of income and situation in the life-cycle within one generation (Nygaard, 2011; Magnusson et al, 2014); economic integration (Kauppinen and Vilkama, 2015); demographic and socioeconomic characteristics (Krivo, 1995; Haan, 2007; Painter and Yu, 2010; Sinning, 2010); and, from the perspective of financial, cultural, and social capital support for new migrants in established co-ethnic communities (Borjas, 2002; Painter et al., 2004; Murdie and Ghosh, 2010; Painter and Yu, 2010). Few studies discuss factors related to cultural differences and continuing attachment to the culture and society of origin (Constant et al., 2009). This study differs as we introduce unique family culture and specifically -co-resident residential preferences to analyze disparities in household formations (and size) among immigrants and Caucasians.

Co-residence of parents and adult children in households is common in China and many developing countries (Ruggles and Heggeness, 2008) and can be explained by the strength of normative family obligations within these ethnic groups, and, similarly in Hispanic and Latino culture (Kemp and Rasbridge, 2004). In the U.S. Pampel (1992), Andorka (1995), Wall (1995), Alter, Cliggett, and Urbiel (1996), Guinnane (1996), Fauve-Chamoux (1996), Ruggles (2007), Tomassini,et.al. (2004) document a decline in intergenerational co-residence behavior among U.S. citizens. There is not complete agreement to the extent of this influence on immigrant families as some scholars stress cultural indelibility of family systems and suggest traditional family forms are fundamental cultural structures and remain resilient to change (Kamo and Zhou, 1994; Huntington, 1996; Therborn, 2004). In this study we look at a particular aspect of acculturation; household formation patterns and in particular co-resident behavior among Hispanic/Latino

and Asian first- and second-generation immigrants.

Frey (1996) finds that foreign-born immigrants prefer to initially live in large gateway cities - as they provide more job opportunities over smaller cities. And, living in high density immigrant regions is often a strategy to minimize the economic, emotional, and psychological effects of immigration. This spatial strategy enables ethnic groups to share resources as recent immigrants adjust to their new environment. However, Alba & Logan (1993) and Logan et al. (1996) find that Asian and Latino immigrants have only moderate degrees of segregation from Caucasian Anglos. Studies by Glick and Hook (2002), Osili and Xie, (2009), Coulson (1999) and Jean and Jimenez (2011) provide ample evidence that immigrant integration improves over time with duration in the U.S. Level and extent of acculturation may also vary among different immigrant groups. Wong-Rieger and Quintana (1987) in a study focusing only on Asian and Hispanic immigrants used a Multicultural Acculturation Scale to test extent of acculturation in 434 immigrants in Oklahoma. They find that Hispanic immigrants were more inclined to assimilation than Southeast Asian immigrants. Further they find that both pre- and post-immigration factors such as ethnic background, motivation for moving and ethnic enclaves are important determinants of their behavior.

Most of the literature explains racial residential segregation by citing factors such as income distribution, poverty, education, capital formation, transportation costs and commuting time to work, as well as preferences for racial homogeneity, government spending, religion, and ethnic support (Kain, 1968; Schelling, 1971; Galster, 1982; Vandell, 1995; Cutler and Glaeser, 1997; Borjas, 2002; Ihlanfeldt and Scafidi, 2002; Haan, 2007; Van Hook and Glick 2007; Haurin and Rosenthal, 2009).

Culture can be transmitted vertically from parents to children (first-generation to second-generation) and transmitted horizontally among peers through social imitation (i.e. predominant Caucasian neighborhood) and learning (Bisin et al, 2004; Bisin and Verdier, 2010). Lastly, ethnic identity potentially influences house ownership decisions (Constant et al, 2009). We use it to adjust the homeownership of first- and second-generation Asian and Hispanic immigrants; especially the second-generation immigrants aged between 20

and 45 who are in a stage of life most associated with homeownership.

In summary, this study extends the literature examining immigrant housing preferences focusing on two ethnic groups sharing similar collective family cultures. A rich set of individual and contextual variables are employed to explain the racial gap in first- and second-generation Asian and Latino immigrants. Specifically, contributions to the previous literature are: (1) we provide a new explanation of the house ownership gap and document household formation differences between Caucasians and immigrants focusing on unique family ethnic culture; (2) we provide new evidence of differentials in housing tenure choices of Latino/Hispanic and Asian immigrants; (3) account for both vertical and horizontal culture influences. These contributions differentiate this study from related work by Painter, Yang and Yu (2004) and Haurin and Rosenthal (2009).

Data and Methodology

Data

We employ household data from the American Housing Survey (AHS) and Public Use Micro-data Sample (PUMS) for 2011[8]. Each household in the data set is assigned a unique identification number; which is utilized as a common identifier to merge different sub-surveys used in this analysis. We merge the "Mortgage", "Newhouse", "Owner" and "Person" surveys creating a contiguous database from which all variables in our analysis are extracted. We only include the households which have data on primary family relationship, including living with siblings and relatives. Our final data set contains 96,529 family observations.

Table 1 provides a sample of the percentage of immigrants who use English as the interview language during the data collection exercise. Approximately 83.90% of first-generation Asian immigrants speak English compared to 58.44% of Hispanic immigrants. However, parity is achieved with second-generation

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[8] The codebook for American Housing Survey is only updated to year 2011.

- Asian at 90% and Hispanic at 91.83%.

Empirical Models

Baseline models

We expect first-generation Asian and Hispanic immigrants to live in a multi-generation family, the base Probit model is set as follows:

$$\Pr(co-residence_i = 1) = g(\alpha Asian_i + \beta Hispanic_i + \psi X + \varepsilon_i) \qquad (1)$$

Where $Asian_i$ and $Hispanic_i$ are first-generation Asian and Hispanic/Latino immigrants; X is the house characteristics matrix including house value, mortgage term, and outstanding mortgage loan balance.

Next, household demographic characteristics matrix Z, inclusive of duration of immigrants stay in U.S., age, gender, educational level of householder, number of elder people in household, and family income, is included.

$$\Pr(co-residence_i = 1) = g(\alpha Asian_i + \beta Hispanic_i + \gamma Z + \psi X + \varepsilon_i) \qquad (2)$$

Studies by Osili and Xie (2009), and Coulson (2011) find immigrants assimilate and are more likely to resemble natives over time as they acclimatize to U.S. culture. Thus we add an interaction term of duration and Asian and Hispanic indicators to equation (2) measuring the potential duration effect on each racial group.

$$\Pr(co-residence_i = 1) = g(\alpha Asian_i + \beta Hispanic_i + \eta_1 duration \times Asian + \eta_2 duration \times Hispanic \qquad (3)$$
$$+ \gamma Z + \psi X + \varepsilon_i)$$

Ebenstein (2014) finds gender ratios are positively related to co-residence rates in Asian (and outside of Asia) countries, and are particularly more common in areas with intensive agriculture. Living in countries with traditional family culture, such as China, sons and their families are normatively endorsed as preferred co-residential partners for older parents (Yan, Chen and Yang, 2003), because sons are explicitly obligated

to take care of the family, i.e., the code of filial piety (Chao, 1983).

Specifically, male householders prefer to co-reside with their parents.[9] Therefore, we add an interaction term of racial indicators and gender of householder to test for a potential differential between Asian and Hispanic gender based householder residential preferences.

$$\Pr(co-residence_i = 1) = g(\alpha Asian_i + \beta Hispanic_i + \varphi_1 hhsex \times Asian + \varphi_2 hhsex \times Hispanic \quad (4)$$
$$+ \gamma Z + \psi X + \varepsilon_i)$$

Cultural familiarity drives immigrants to communicate with peer immigrants. If immigrants live in a region of high immigrant density, we expect that exposure to similar immigrants will impact their assimilation behavior. According to the American Community Survey, immigrants cluster in the Western region more than Southern, Northeast, and Midwest regions of the U.S.. To test this affect we add regional (reference group = Northeast) indicators to equation (4). In the following section, we include all regional indicators in the household locations matrix L in the following equations:

$$\Pr(co-residence_i = 1) = g(\alpha Asian_i + \beta Hispanic_i + \lambda_1 midwest + \lambda_2 south + \lambda_3 west \quad (5)$$
$$+ \gamma Z + \psi X + \varepsilon_i)$$

Contextual Interaction models

Using Blume, Brock, Durlauf and Jayaraman (2015) linear social interaction model as a reference, we develop a contextual/social interaction model examining immigrant co-resident preferences. Immigrants maximize their expected utility function in the Bayes-Nash equilibrium as follows:

$$\omega_i = \frac{\gamma}{1+\phi} x_i + \frac{\delta}{1+\phi} \sum_j c_{ij} x_j + \frac{\phi}{1+\phi} \sum_j a_{ij} E(\omega_j | x) + \frac{1}{1+\phi} \varepsilon_i$$

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[9] Du and Wei (2010) and Bhaskar and Hopkins (2011) both analyze the effect of a rise in the gender ratio (more men than women) within family on the aggregate savings rate in equilibrium. Empirically, Chinese parents with a son raise household savings to potentially improve his chance of marriage due to rising sex ratio imbalance making it more difficult for males to marry (Wei and Zhang, 2011). This increase in the gender ratio will result in a male householder in a co-residence family; therefore we emphasize householder gender impact on co-residence behavior.

Where i refers to each immigrant who will choose an action ω_i to maximize his utility; the term $\sum_j c_{ij} x_j$

captures a contextual effect, the direct influence of neighbor characteristics on immigrant (i's) choices. The weighted average neighborhood characteristics include, gender, marital status, income, and are represented in a contextual-effects network. Expected average effect from contextual behaviors in immigrant neighborhoods is expressed as $\sum_j a_{ij} E(\omega_j | x)$. The parameter ϕ determines the marginal rate

of substitution between private and social components of utility. The matrices A and C [10] elements a_{ij} and

c_{ij} determine the neighborhood effects and contextual effects are weighted socio-matrices for the neighborhood and contextual-effects network. In social network models, an individual is supposed to live in the non-overlapping group g. In the linear-in-means model, an individual's behavior depends on his average group characteristics and average group behavior, as shown in the following model.

$$\omega_i = \frac{\gamma}{1+\phi} x_i + \frac{\delta}{1+\phi} \overline{x}^g + \frac{\phi}{1+\phi} E(\overline{\omega}^g | x) + \frac{1}{1+\phi} \varepsilon_i \quad \text{Model (1)}$$

Manski's (1993) study of social effects is based upon a large sample approximation of Model (1), in which for i, we can rewrite the above social interaction model into a simple regression model, where g is the size of the neighborhood group.

$$\omega_i = b_0 + b_1 x_i + b_2 \overline{x}^g + \eta_i \quad \text{Model (2)}$$

Then we can further our basic empirical test model by introducing a contextual interaction term $\overline{Caucasian}$. We consider the effect of a neighborhood group in the same MSA, accounting for the average Caucasian group's (i.e. majority population) co-residence behavior. We select household size and income in Caucasian

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[10] A and C are the group of weighted a_{ij} and c_{ij}. Each has dimension N × N and the magnitudes of the matrix elements measures the strength of network ties. We evaluate social ties on the group level, which we define as the MSA area.

households as a contextual neighborhood characteristic potentially influencing choices made by immigrants.[11] Equation (6) is formulated based on a social interaction model:

$$\Pr(co-residence_i = 1) = g(\alpha Asian_i + \beta Hispanic_i + \rho \overline{Caucasian} + +\gamma Z + \eta L + \psi X + \varepsilon_i) \quad (6)$$

where the *Asian* and *Hispanic* are first-generation Asian and Hispanic immigrants respectively, $\overline{Caucasian}$ is the matrix including the average Caucasian family size and family income in the same MSA. Z is the households demographics matrix, L is the household locations matrix, and X is the house characteristics matrix.

U.S. born second-generation family members tend to behave more like natives in the host environment. This is expected as they grow up in the U.S., attend school and have experiences in U.S. culture from an early age. We replace the first-generation variable in equation (6) with second-generation information to produce equation (7). A comparison of coefficients from equations (6) and (7) test statistically for differences between first- and second-generation immigrants.

$$\Pr(co-residence_i = 1) = g(\alpha SAsian_i + \beta SHispanic_i + \rho \overline{Caucasian} + +\gamma Z + \eta L + \psi X + \varepsilon_i) \quad (7)$$

Where *SAsian* and *SHispanic* are second-generation Asian and Hispanic/Latino immigrants respectively, $\overline{Caucasian}$ is the matrix including the average Caucasian family size and family income in the same MSA. Z is the households demographics matrix, L is the household location matrix, and X is the house characteristics matrix. A description of variables used in equations 1 through 7 is presented in Table 2.

Empirical Results

First-Generation Immigrants

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[11] Families are located in 148 MSAs as detailed in the regional separation reported in the American Housing Survey. We also include both county-level and census-division level test for robustness.

A basic specification is modeled, testing first-generation Asian and Hispanic/Latino immigrants on propensity to co-reside controlling for house characteristics. Results are reported in column 1 of Table 3. The marginal effect indicates that first-generation Asian and Hispanic/Latino immigrants on average are more likely to co-reside compared with Caucasian Americans. The difference is statistically significant at a 1% level. The control variable house value is positively related to families co-residing. Further, after including household demographic characteristics, as shown in the second column of Table 3, age of household head, number of elders in household, and family income are positively related to families co-residing; and, average age of household, and the education level of householder are negatively related to co-residence. As expected, first-generation Asian and Latino immigrants are more likely to live with their own adult children or relatives, in-line with traditional cultural expectations. Asian immigrants on average are 2.4 percent more likely to live together as compared to native-born Caucasian Americans, statistically significant at a 1 percent level. Hispanic/Latino immigrants share a similar collective family culture as Asians; and they also are more likely (1.7 percent) to co-reside compared with native-born Caucasian Americans. Given the size and scale of the U.S. immigrant population (about 66.81 million according to the 2013 U.S. Census Bureau Population Division), residential real estate owned by Hispanic/Latinos and Asians (Hispanics/Latinos 14.68 million units and Asians 4.75 million housing units), and the contribution to housing growth[12] these results are economically considerable and relevant.

As presented in column 3 of Table 3, the interaction term duration show that both Asian and Hispanic Immigrants propensity to live in large families declines as duration increases. Based on the size of the marginal effect, duration of stay for first-generation immigrants only moderately changes co-resident preferences, thus suggesting co-resident behavior is deeply rooted in cultural attitudes for first-generation Asian and Hispanic/Latino immigrants. These results also compliment the findings of Ebenstein, 2014 regarding the concept of patrilocality, as co-residence rates are slightly higher for men than women, displayed in column (4) of Table 3. Non-significant coefficients with the gender and racial group interaction

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[12] Harvard's JCHS (2014) estimates that foreign-born share of U.S. household growth is close to 40%.

terms reveal that differences between female Asian and Hispanic immigrant householder's co-resident choices are not detected.

Expecting immigrants that cluster in regions with a substantial population of peer immigrants to be more likely to retain traditional attitudes and thus more likely to co-reside, a potential cohort effect is considered. We add locational variables accounting for regional disparities in immigrant populations. Immigrant density in the Western and Southern regions of the U.S. are 32.57% and 31.46% respectively, compared to 25.68% and 18.11% in the Northeast and Midwest regions.[13] The results (Column 5, Table 3) show immigrants in Western (2.3 percent) and Southern (1.6 percent) U.S. regions have a greater likelihood of retaining their traditional culture compared to those located in the Northeast region, our control region.[14]

Second-generation immigrants

Second-generation immigrants are ex-ante expected to share more similar characteristics with native born Americans than their parents, as they are born and educated in the U.S. Therefore, like other native-born households, they tend to be well integrated into American society. To identify co-resident housing differences between first- and second-generation immigrant households, we model a sample of second-generation immigrants born in the U.S. This group has at least one of their parents born outside of the U.S. The results, reported in Table 4, suggest second-generation Asian immigrants change their housing preferences in-line with American born Caucasian behavior. The marginal propensity to co-reside for second-generation Asian immigrants is -0.6 percent (not statistically significant) compared to 2.5 percent for first-generation Asian immigrants of 2.5. This change in housing formations is more stark for Asians than second-generation Hispanic or Latino immigrants, who seem to retain their cultural behavior, although somewhat relaxed. First generation Hispanics are 1.9 percent more likely to co-reside compared to 0.9 percent for second-generation Hispanic and Latino immigrants. The greater communication and physical

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[13] Data source: 2007-2011 American Community Survey. (Specifically, 33.78% Hispanic and 6.92% Asian in West; 21.3% Hispanic and 1.9% Asian in South; 8.31% Hispanic and 2.04% Asian in Midwest; 17.84% Hispanic and 4.40% Asian in Northeast)
[14] We also replace regional indicator variables with immigrant density and find immigrant concentration will increase the propensity of co-residence, consistent with our previous results. Results are presented in Appendix A, Table 19.

connection between Hispanics/Latinos immigrants and their homeland may have potentially contributed to the greater retention of traditional culture. Hispanics/Latino immigrants are ethnolinguistic and unlike Asians, they share relatively close geographic proximity to their country of birth. Additionally, Hispanic immigration flow has historically been more fluid and abundant than that of Asians. [15]

Burr et al. (2013) suggest that living in areas where there is less potential of social interaction with Caucasians should result in a greater likelihood of co-residence among immigrants. In our social interaction models, both neighborhood (MSA) contextual behavior and economic characteristics significantly influence immigrant residential preferences. We find that co-residence behavior among immigrants is partially conditioned on contextual effects of local Caucasian household size and income. Co-residence housing patterns for first- and second-generation immigrants are positively related to local Caucasian household size, and local Caucasian household income is inversely related to co-residence behavior among first- and second-generation immigrants.

As robustness, MSA locational delineations are replaced with county and census division spatial delineations. The 96,529 families in our sample are located in 81 counties and 7 census divisions. Coefficients tabulated in Table 5 are robust to those at the MSA-level presented in Table 4. First-generation Asian and Hispanic immigrants prefer co-residence, but second-generation Asian immigrants are less likely to co-reside. Second generation Hispanic immigrants keep, although relaxed, the co-residing preferences of their parents. Contextual covariates are also robust to previous findings.

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[15] We model test this contention by modeling distance (flight hours) between family members country of origin to U.S. (from origin country to destination country (U.S.)). And, find the coefficient for flight hours is negative and significant in both baseline and contextual models, indicating an inverse relationship for first-generation immigrants – suggesting that the further the country of origin the less likely to retain cultural housing preferences. However, when only considering the householder country of origin we do not have significant results with first-generation immigrants. This may be the result of already controlling for Asian and Hispanic/Latino Householder country of origin in the model, as Asian countries are typically located further from the US compared with Hispanic/Latino countries. We also, examine the effect of export volume (*Trade*) from country of origin to US and find coefficients for *Trade* are positive for second-generation models suggesting that the level of trade between counties positively impacts the decision to maintain original housing culture. The results are robust to U.S. import and export proxies. Results not presented herein for brevity.

Immigrants Family Background Heterogeneity

The previous analyses estimated co-resident preference of first- and Second-generation Asian and Hispanic/Latino immigrants and their preferences based on Caucasian contextual effects. In this subsection, we investigate the heterogeneous effects of immigrant family income, education level, employment status, and family structure, to further explain differentials in co-resident preferences of immigrants.

Subsamples conditioned on family income

Family income is an important factor influencing immigrants' behavior; therefore we test co-residence behavior of first- and second-generation immigrants conditioned on income. The minimum family income of immigrants in our sample is $344 and the maximum income is $2,977,104. We parcel the sample into two income groups based on median family income, which is $54,914. As documented in Table 6, differences emerge between sub-samples. Families with high income (i.e., more than the median) tend to be less likely to co-reside, although both Asian and Hispanic first-generation immigrants still have a propensity to co-reside. This seems particularly the case with Hispanic immigrants, as the differential between second-generation Hispanic is strengthened when considering income. We observe that traditional co-resident behavior is much more likely in families with low income than in families with high income, particularly with second-generation householders. Differences among coefficients conditioned on family income for second-generation immigrants are significant. Income parity produces similar residential co-residence behavior among second-generation Asian and Hispanic/Latino immigrants and native Caucasian households. This result is consistent with the findings of Rosenzweig and Zhang (2014), who find that higher incomes lead to a higher likelihood of moving out of parent's house.

Subsamples conditioned on Education

Next, the effect of educational experience on co-residence behavior is documented. We parcel households conditioned on education attainment. These two sub-sample groups represent 'high-level education'

(college, master, or doctoral degree), and 'low-level education' (no more than high school education). As presented in Table 7. Again, first-generation Asian and Hispanic immigrants with high- or low-level education attainment prefer to co-reside. First-generation Asian immigrants with a high-level of education are marginally less likely to keep traditional co-residence behavior as compared to those with low-level of education. However, second-generation Asian immigrants irrespective of their education levels shift their preferences to live independently.

Subsamples conditioned on Employment

Employed immigrants are more likely to interact with people outside of their culture and also be financially independent, we create sub-samples based on employment. A household is reported in the "Employed group" when a person in the household receives wages or salary. Results, as presented in Table 8, highlight again that first-generation Asian and Hispanic immigrants prefer to co-reside. However, first-generation Hispanic/Latino immigrants without a job are statistically more likely to co-reside compared to peer employed group. Contextual social interactions have larger effects on the employed sub-sample group compared to their unemployed peers. Labor market experience impact immigrants' socioeconomic status and leads to more interaction with the native community, which in turn, influences housing preferences.

We also examine house-holder self-employed effect – Borjas (1986) finds a strong, positive impact of assimilation on self-employment rates. Self-employed immigrants are less likely to maintain their co-residence culture. This evidence exists for both first- and second-generation immigrants, results presented in Table 9.

Subsamples conditioned on Adult Households

The sample data is parceled to obtain data on households without children under the age of 18. This affords another test of co-residence behavior. As we are only considering households with adults, positive marginal effects for Asian and Hispanic households might more accurately suggest co-residence preferences among adult children and parents. Results tabulated in Table 10 document that first-generation Asian and

Hispanic/Latino immigrants prefer to live in co-resident households. And, also consistent with our prior findings, second-generation Hispanic immigrants are more likely to co-reside whereas we do not find a significant effect for second-generation Asians. The magnitude of the co-residence probability for adult households is larger than the general household, which are 4.5 percent and 2.8 percent respectively. The social interaction proxies- family size of local Caucasians households have a significant positive effect and their family income has a significant negative effect on immigrants' co-resident preferences, confirming prior results.

Further Robustness Checks

In this section, we consider four additional possibilities regarding immigrant family co-residence, specifically focusing on the differential between first- and second-generation immigrants. We consider: (1) local housing costs, (2) agglomeration of first-generation immigrants in central cities, (3) the fusion of immigrants in U.S., and, (4) modernism of second-generations in their native countries outside of the U.S. are considered.

Local housing Costs

Housing cost is often a key driver of co-residence behavior in developing countries (Ruggles and Heggeness, 2008). In the U.S., rising income and lower housing cost were major factors reducing traditional co-residence behavior (Costa, 1997). So, perhaps, relatively high housing costs could explain why first-generation immigrant families co-reside. This is especially true for immigrant households residing in cities with rapidly appreciating housing prices. Therefore, in this section, we explore Asian and Hispanic/Latino immigrants' co-residence behavior focusing on differentials among rates of housing price appreciation. We use the Federal Housing Finance Agency MSA seasonal adjusted house purchase-only index to calculate housing price growth rates.[16] This is done for each immigrant household observation since they first arrived

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[16] The Metropolitan Statistical Areas seasonal adjusted house purchase-only index can be found on the Federal Housing Finance Agency website, see http://www.fhfa.gov/DataTools/Downloads/Pages/House-Price-Index-Datasets.aspx#qpo

in the U.S., and is considered a proxy for changes in relative local housing costs. As reported in Table 11, consistent with previous results first-generation Asian and Hispanic/Latino immigrants prefer to co-reside whereas second-generation Asian immigrants shift preferences to live independently. Importantly, the growth rate in housing price is positively related to the propensity of both first- and second-generation immigrants as well as native born Caucasian Americans to co-reside. However, the interaction of housing price growth rate and different immigrant groups is not significant, confirming our findings that first-generation immigrant's co-residence preference is rooted in unique family culture and not the result of housing financial constraints.

The Fusion of immigrants in U.S.

Complete agreement in the literature regarding immigrants' ability (or time-frame) to assimilate or integrate into U.S. society is lacking. Some studies contend that immigrants assimilate and are more likely to resemble native-borns over time as they accumulate U.S. experience (Osili and Xie 2009, Coulson 2011). However, other studies show that immigrants hold on to their original culture, and this is independent of longevity in the U.S., suggesting housing segregation among racial groups is common in America's cities and communities (Galster and Zobel, 1998; Johnson and Lichter 2010; Tienda and Fuentes 2014; Bayer, et al, 2014; Brasington, et al, 2015). In this section, we test whether Asian and Hispanic/Latino immigrants' residential preferences are impacted by U.S. experience as measured by longevity in the U.S.

The AHS survey reports the year of arrival in the U.S. for each immigrant household, enabling a length of stay computations. In our 2011 dataset, the earliest immigrant family arrived in 1923 and the most recent immigrated in 2011. Applying the Lin, Liu and Xie (2015) method, we separate immigrant households into three duration categories. Around 24% of first-generation immigrant households (1269 Asian and 1981 Hispanic) have been in the United States for less than 10 years, 55% (2789 Asian and 4612 Hispanic) for 11 to 30 years, and 21% (1118 Asian and 1599 Hispanic) for more than 31 years. We estimate a Probit

model with the following specification:

$$\Pr(co-residence_i = 1) = g(\alpha_1 duration010_i + \alpha_2 duration1030_i + \alpha_3 duration30_i + \beta X_i + \varepsilon_i) \qquad (8)$$

where, $duration010_i$, $duration1030_i$ and $duration30_i$ are longevity indicator variables. The reference group is native-born households including second-generation Asian and Hispanic/Latino immigrants. X_i represents household demographics, household locations, and house characteristics - same as the previously presented baseline model. The sample is parceled into two subsamples by race (Asian and Hispanic/Latino immigrants) and we test whether immigrant co-residence behavior is impacted by duration and/or different among racial groups. The results, presented in Table 12, document first-generation Asian and Hispanic/Latino immigrants choice to co-reside is not dependent on how long they have been in the United States. The estimated co-resident gap between recent Asian immigrants (less than 10 years) and native-born Caucasian Americans is significant at 3 percentage points. This remains about the same for both remaining categories (11 - 30 years, and more than 30 years). The estimated co-resident rate gap between Hispanic/Latino immigrants and Caucasians is 1.8 percent for those who have lived in U.S. for less than 10 years, 2.6 percent for 11 to 30 years, and 2 percent for more than 30 years.

We also show our findings are robust to alternative specifications in which we classify Asian and Hispanic/Latino immigrants into three categories: less than 15 years, 16 to 35 years, and more than 35 years. The results in Table 13 document first-generation Asian and Hispanic/Latino immigrants behave differently from natives regardless of duration in the U.S. This confirms our findings regarding the resiliency of cultural fidelity among first-generation immigrants housing preferences.

Agglomeration of Immigrants in central city

Immigrant self-selection into central cities to access culture, employment, infrastructure, etc. could potentially influence results. In order to address this concern, we construct two subsamples using propensity score matching (PSM) and compare co-residence behavior among immigrant households in the central city

of an MSA with immigrants living in areas outside the central city.[17] We define immigrant households living in the central city of an MSA as the treatment group, while immigrant households living outside the central city as the control group. The impact of location selection on the incidence of co-residence is the treatment effect. The basic purpose of PSM matching is to compare immigrants living in the central city of an MSA with those living in outside this area while insuring that both groups share similar covariate values. The systematic differences in co-residence behavior between sub-sample households can be attributed to a treatment effect, i.e., the location - rather than other observed covariates.

Nearest neighborhood matching is employed to estimate the baseline results, this is further confirmed by robustness tests utilizing both radius and kernel matching procedures. Matching results are presented in the first row of Table 14.[18] The estimated ATT (average treatment effect on the treated) is statistically significant, ranging from 2.3 to 2.5% across different matching methods suggesting households living in central cities are more likely to co-reside compared with households living outside these areas. It is likely that immigrants living in high density central locations have more association with peer immigrants and thus surrounded by familiar culture. These findings compliment Alba and Logan (1993), Alba et.al (1999) and Ioannides and Zabel (2008) suggesting relative location within an area affects assimilation behavior.

The treatment group is further classified into two subgroups: (1) first-generation immigrant households, and, (2) second-generation immigrant households. Comparison of subgroups with respect to location choice is presented in rows 2 – 5 in Table 14. Results show significant differences in probability of co-residence between first-generation immigrant households living in central cities with immigrant households living outside central cities, with the average probability of co-residence behavior higher for first-generation immigrants living in central cities - especially for Asian immigrants. This result is robust to radius and kernel matching procedures. Comparison of second-generation immigrants shows that there is not a

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[17] Household locational variables are defined in the AHS.
[18] Match quality is presented in Appendix B.

significant difference between living in central cities and outside central cities.

We use the matched sample to re-test the baseline model expressed in equation (6) and equation (7). Results presented in Table 15 are consistent with the baseline results in Table 4 with the probability of co-residence in the matched sample of first-generation Asian and Hispanic immigrants higher than the earlier models suggested. Contextual/social interaction terms still affect co-resident preferences among Asian and Latino immigrants.

Co-resident Behavior of Native Residents in Home Countries outside the U.S.

Considering previous results documenting that second-generation Asian Immigrants change co-resident behavior in the U.S., we test to see if the observed change is resultant of exposure to American culture or led by demographic changes in their own native culture. Co-resident behavior is quite common in urban China. (Altonji, et.al, 1992; Hayashi,et.al, 1996; Attanasio and Weber, 2010; Rosenzweig and Zhang, 2014) and other Asian countries. According to the 2005 World Values Survey, among men aged 25-39 in China, 41% reported they were living with their parents. Inter-generational co-residence in urban China, moreover, as documented by Ruggles and Heggeness (2008), is increasingly reflective of the support by the old of the young. And, many studies analyze parent–child co-residence behavior in China from a sociological or historical rather than an economic perspective (Tsui, 1989; Ikels, 1990; Bian et al, 1998; Cooney and Shi, 1999; Zhang, 2004). Other Asian countries such as Thailand and Taiwan have overall inter-generational co-residence rates exceeding 60% in this age group. Similarly, in Hispanic or Latino countries, 67.4% of people prefer to co-reside with relatives, especially adult children. The rate in the United States for the same age group is about 11%.

To compare second-generation Asian immigrants in the U.S. with similarly aged Asian native residents in their home countries, we retest our baseline co-residence model by using the 2010 China Family Panel Studies (CFPS) data.[19] This survey is a nationally representative sample of Chinese communities, families,

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[19] We use the China Family Panel Studies in 2010 rather than 2011 because the 2010 China Family Panel Studies is

and individuals, containing data on 15,717 households and 33,600 adult respondents in 2010. The survey includes most questions covered in four U.S. counterpart datasets: the PSID, CDS, HRS, and NYLS. Results presented in Table 16 show a comparison group of similarly aged Chinese natives (living in China) are still more likely to co-reside after controlling for household demographics, location, and house characteristics.[20] After parceling the full sample into urban and rural groups, the gap in co-resident rate between Chinese natives aged 30 to 51, and older Chinese natives in rural areas is 4.4 percent, which is larger than natives in urban area (2.3 percent). Chinese natives living in the Western region are around 3 percent more likely to co-reside than other regions, likely due to lower social and economic development conditions. Comparing results with Asian immigrants in the U.S., we find control variables produce a consistent sign. Family income and house value are positively related to the co-resident rate, while female householder, age negatively influence co-resident rate. In summary, we confirm our earlier findings that the substantial shift in second-generation Asian immigrant co-resident behavior is related to their experience in the U.S. and not because of housing preference changes among their peers in China.

Policy implication: Estimated House ownership of Immigrants

Housing tenure decisions among first- and second-generation immigrants substantially influences housing demand in the U.S. In this section, we test co-residence preferences of first- and second-generation Asian and Hispanic/Latino immigrants conditioned on housing tenure and headship outcomes. First-generation Asian and Hispanic/Latino immigrants prefer co-residence regardless of housing tenure; however marginal effects presented in Table 17 documents propensity to co-reside among first-generation immigrant families owning a house is lower than those renting. Interestingly, second-generation Asians who rent rather than buy are 6.4 percent less likely to co-reside; however second generation Hispanics who rent are 2.7 percent

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the baseline household survey in China and has been widely documented. The household survey in 2011 is just a follow-up study on some households.

[20] Age of householder among U.S. second-generation Asian Immigrants in 2011 AHS is 30 years at 25th percentile and 51 years old at the 50th percentile. We compare second-generation Asian natives in the U.S. with residents in China who are in this age group (30 to 51 years old). Descriptions of variables are in Table 22, Appendix C.

more likely to co-reside. This could potentially result in lower houseownership for young Asian and Hispanic/Latino immigrant adults, which is consistent with the findings of Drew (2015). Our results here seem to suggest two things: (1) rental housing might need to accommodate larger family size to appeal to first-generation immigrant families, particularly Hispanic/Latino families, and, (2) Second-generation Asians seem to be larger consumers of rental housing and prefer smaller units as they are less likely to co-reside, while second-generation Hispanic immigrants are more likely to co-reside perhaps preferring larger rental units.

Next, the sample is parceled into two different subsamples based on householder age. The median age of the householder is 47 years old. We categorize the headship group in which the age of householder is over 18 years old and lower than 47 years old as "young", and the group in which the age of householder is over 48 years old as "old". The results in Table 18 suggest that first-generation Asian immigrants in both groups prefer to co-reside. However, second-generation Asian immigrants with "young" householders are 1.4 percent less likely to live with parents or relatives as compared to "old" householder who are only 0.3 percent less likely. Consistent with previous findings, both first- and second- generation Hispanic/Latino immigrants are more likely to co-reside, regardless of the age of householder. This supplements our suggestion that smaller units would be more popular for relatively young Asian-Americans while larger units are more suitable for the preferences of young Hispanic-Americans.

Conclusion

Documenting first- and second-generation Asian and Hispanic/Latino immigrant co-residence preferences, we extend the literature by identifying several factors shaping their household formations including: (1) notable differences between first- and second-generation immigrants, (2) neighborhood and contextual effects, (3) income, education, employment and duration disparity, and (4) a geographic immigrant density effect. In general, first-generation immigrants are slow to change traditional household attitudes. First-generation Asian and Hispanic/Latino immigrants are more likely to co-reside compared to native born

Caucasian Americans. The results are robust to propensity score matching techniques controlling for possible geographic selection bias.

These traditional co-resident living arrangements among Asian and Hispanic/Latino immigrants are, however, influenced by neighborhood contextual effects, immigrant density (cohort effect), and lastly income. Higher immigrant density reinforces traditional cultural housing attitudes (co-residing) among Hispanic/Latino and Asian immigrants, and leads to a cohort type effect. When contextual variables are added to the baseline model, we find that local Caucasian family size positively impacts the probability of co-residing and neighborhood income is inversely related to co-residing among immigrants.

Second-generation Asian immigrant co-residence behavior conforms to native born Caucasian American preferences; this is in contrast to second-generation Hispanic/Latino immigrants, although somewhat relaxed, and parity is achieved with income equality. The differences can also be partly explained by the greater communication and physical connection between Hispanics/Latino immigrants and their homeland as they are ethnolinguistic and unlike Asians, share relatively close geographic proximity to their country of birth.

A parceled sample of households without children under the age of 18, affords another test of co-resident behavior as these households might more accurately suggest co-residing preferences among adult children and parents. Consistent with prior findings, first-generation Asian and Hispanic/Latino immigrants prefer to live in co-resident households. And, also consistent with our prior findings, second-generation Hispanic/Latino immigrants are more likely to co-reside whereas we do not find a significant effect for second-generation Asians.

Immigration is projected to remain robust in the decades ahead and we believe that first- and second-generation immigrants will continue to drive significant portions of housing demand and consumption. Understanding immigrants and their resident preferences is important for policy and economic considerations. Our findings contribute in this area by identifying several factors shaping immigrant

household formations including differentials between first- and second-generation immigrants, contextual effects, and conditional effects based on age, gender, income, education, employment, dwelling period, local immigrant density and housing market conditions. Immigrant housing demand and demand in general should consider these factors, which will help shape the future of the U.S. domestic housing market. This paper also extends the literature analyzing immigrant housing tenure choices by explicitly accounting for ethnic identity as a potential influence on house ownership decisions. Further study in this area, could consider co-residence experience with housing risk in both housing and renter markets as there would be a reduction of sales price risk among first-generation immigrants (Sinai and Souleles, 2005, 2013). Increased awareness of immigrant housing attitudes can enable improved understanding of housing markets and ownership trends, especially as demographics are changing the U.S. landscape.

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Figure 1 Population percentage of selected racial groups in the United States from 2005 to 2013
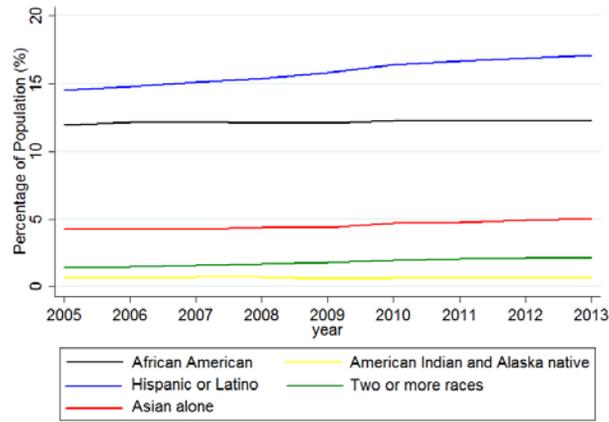
Data source: American Community Survey (ACS)

Figure 2 Occupied units owned by different racial minority groups in the United States from 1997 to 2013.
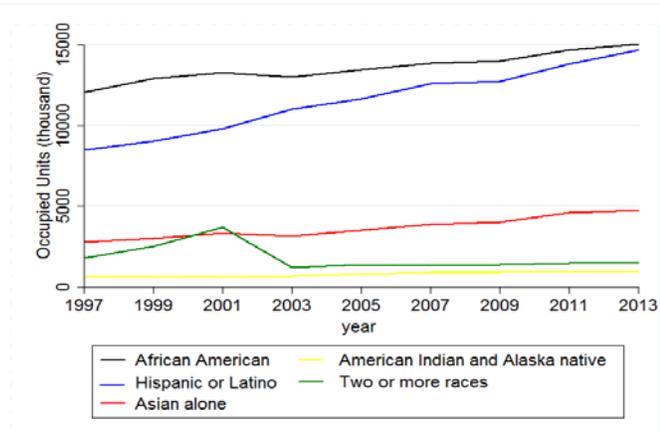
Data source: American Housing Survey (AHS)[21]

Table 1 Assimilation of Asian and Hispanic immigrants based on interview language

Interview language	First-generation Asian immigrants	Second-generation Asian immigrants	First-generation Hispanic	Second-generation Hispanic immigrants

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[21] Hispanic or Latino racial group was not defined until 2003 as an independent classification in the AHS.

			immigrants	
English	4343	849	4787	5233
Percentage	83.90%	90%	58.44%	91.83%

Note: Table 1 provides a sample of the percentage of immigrants who use English as the interview language during the data collection exercise.

Table 2 Description of variables

Variables	Definition	Value
Dependent variable:		
$co-residence$	Immigrants live with their children or relatives in one family	1: live with children or other relatives 0:live individually
Independent variables:		
$Asian$	First generation of Asian only immigrants	1:race of householder is Asian only and the birth country is not United States; 0:others
$SAasian$	Second generation of Asian only immigrants	1:race of householder is Asian only and the birth country is United States; 0:others
$Hispanic$	First generation of Hispanic/Latino immigrants	1: the birth country of householder is Hispanic/Latino and Spanish origin of householder. 0:others
$SHispanic$	Second generation of Hispanic/Latino immigrants	1: the birth country of householder is United States and Spanish origin of householder 0:other
$\overline{Caucasian}$	Average number of people in Caucasian household in same metropolitan statistical area (MSA) (or county or Census division). Average family income of Caucasian household in same metropolitan statistical area (MSA) (or county or Census division).	
Household Demographics:		
$duration$	The year of immigrant households lived in United States	
$hhsex$	Gender of Householder	1:Householder is female 0:Householder is male
age	Average age of people in household	
$hhage$	Age of householder	
$elder$	Number of persons living in household 65 years or older	
$hhgrad$	Educational level of householder	1: higher degree than high school level education 0: high school or lower than high school

Table 2 Continued

income	Family income	log value
Household Locations:		
midwest	Midwest region	1:Midwest 0:other regions
south	South region	1:South 0:other regions
west	West region	1:West 0:other regions
House Characteristics:		
loan	Mortgage status	1:Yes 0:No mortgage
term	Term of 1st mortgage	
value	Current market value of unit	Unit: million dollars

Note: Description of variables used in equations 1 through 7.

Table 3 First-generation immigrant co-residence

Variables	(1)	Marginal effect	(2)	Marginal effect	(3)	Marginal effect	(4)	Marginal effect	(5)	Marginal effect
Asian	0.349*** (5.875)	0.026	0.353*** (5.196)	0.024	0.524*** (3.714)	0.031	0.351*** (4.124)	0.023	0.406*** (5.918)	0.025
Hispanic	0.324*** (5.984)	0.024	0.236*** (3.600)	0.017	0.331*** (2.676)	0.022	0.226*** (2.809)	0.017	0.277*** (4.117)	0.019
Household Demographics										
duration			0.001 (0.886)	0.000	0.002 (1.372)	0.000	0.001 (0.885)	0.000	0.002 (1.400)	0.000
*Asian*duration*					-0.009 (-1.487)	0.000				
*Hispanic*duration*					-0.005 (-1.032)	0.000				
hhsex			-0.070*** (-3.262)	-0.006	-0.070*** (-3.253)	-0.006	-0.071*** (-3.202)	-0.006	-0.067*** (-3.134)	-0.006
*Asian*hhsex*							0.005 (0.039)	0.000		
*Hispanic*hhsex*							0.026 (0.226)	0.002		
age			-0.014*** (-18.913)	-0.001	-0.014*** (-18.891)	-0.001	-0.014*** (-18.909)	-0.001	-0.014*** (-18.926)	-0.001
hhage			0.021*** (14.651)	0.002	0.021*** (14.681)	0.002	0.021*** (14.681)	0.002	0.021*** (14.711)	0.002
hhgrad			-0.080*** (-3.086)	-0.008	-0.080*** (-3.085)	-0.007	-0.080*** (-3.085)	-0.007	-0.070*** (-2.691)	-0.006
elder			0.044* (1.819)	0.004	0.043* (1.800)	0.004	0.043* (1.800)	0.004	0.050** (2.076)	0.004
income			0.052*** (3.667)	0.005	0.052*** (3.679)	0.005	0.052*** (3.667)	0.005	0.052*** (3.663)	0.005

Table 3 Continued

Variables	(1)	Marginal effect	(2)	Marginal effect	(3)	Marginal effect	(4)	Marginal effect	(5)	Marginal effect
Household Locations										
midwest									0.180***	0.014
									(5.026)	
south									0.207***	0.016
									(7.055)	
west									0.301***	0.023
									(10.487)	
House Characteristics										
loan	0.057	0.005	0.021	0.002	0.022	0.002	0.022	0.002	0.040	0.003
	(1.258)		(0.457)		(0.477)		(0.477)		(0.869)	
term	-0.007***	-0.001	-0.006***	-0.001	-0.006***	-0.001	-0.006***	-0.001	-0.005***	-0.000
	(-4.678)		(-3.741)		(-3.720)		(-3.720)		(-3.037)	
value	0.179***	0.017	0.093*	0.008	0.093*	0.008	0.093*	0.008	0.236***	0.020
	(3.770)		(1.944)		(1.931)		(1.931)		(3.849)	
Observations	45099		44782		44782		44782		44782	
Pseudo R^2	0.008		0.036		0.038		0.038		0.047	

Note: This table reports the coefficients from Probit regressions based on equation (1) (2) (3) (4) (5) along with robust standard errors (clustered at the household level) in parentheses. The dependent variable is an indicator variable of co-residence, that is living with children or relatives. *** significant at 1 percent level, ** significant at 5 percent level, * significant at 10 percent level. The marginal effect of a dummy variable measures the impact of a discrete change of the dummy variable from 0 to 1.

Table 4 First- and second-generation immigrants in both baseline and social/contextual models

	Baseline model				Contextual model			
	Co-residence				Co-residence			
		Marginal effect		Marginal effect		Marginal effect		Marginal effect
Asian	0.406*** (5.918)	0.025			0.480*** (7.608)	0.028		
SAsian			-0.068 (-0.719)	-0.006			-0.048 (-0.503)	-0.004
Hispanic	0.277*** (4.117)	0.019			0.314*** (5.292)	0.021		
SHispanic			0.117** (2.343)	0.009			0.100** (1.999)	0.008
People in Caucasian household in same MSA					0.176** (2.198)	0.015	0.190** (2.368)	0.016
Family income of Caucasian household in same MSA					-0.036*** (-4.285)	-0.003	-0.031*** (-3.627)	-0.003
Control Variables								
Household Demographics	Yes		Yes		Yes		Yes	
Household Locations	Yes		Yes		Yes		Yes	
House Characteristics	Yes		Yes		Yes		Yes	
Observations	44782		44782		44782		44782	
Pseudo R^2	0.045		0.042		0.046		0.043	

Note: This table reports the coefficients from Probit regressions based on equation (6) and equation (7) along with robust standard errors (clustered at the household level) in parentheses. The dependent variable is an indicator variable of co-residence, that is living with children or relatives. *** significant at 1 percent level, ** significant at 5 percent level, * significant at 10 percent level.

Table 5 Robustness test for location (County and Census Division)

	County level				Census Division level			
	Co-residence				Co-residence			
		Marginal effect		Marginal effect		Marginal effect		Marginal effect
Asian	0.407*** (5.928)	0.025			0.405*** (5.892)	0.025		
SAsian			-0.074 ((-0.779)	-0.007			-0.068 (-0.720)	-0.006
Hispanic	0.258*** (3.832)	0.018			0.274*** (4.067)	0.019		
SHispanic			0.101** (2.011)	0.008			0.113** (2.252)	0.009
People in Caucasian household neighborhood	0.334*** (3.595)	0.031	0.355*** (3.823)	0.031	0.178 (0.514)	0.015	0.173 (0.500)	0.015
Family income of Caucasian household neighborhood	-0.012 (-1.544)	-0.001	-0.008 (-1.047)	-0.001	-0.057 (-0.598)	-0.005	-0.064 (-0.679)	-0.006
Control Variables								
Household Demographics	Yes		Yes		Yes		Yes	
Household Locations	Yes		Yes		Yes		Yes	
House Characteristics	Yes		Yes		Yes		Yes	
Observations	44782		44782		44782		44782	
Pseudo R^2	0.046		0.043		0.045		0.042	

Note: This table reports the coefficients from Probit regressions based on different regional neighborhood definition along with robust standard errors (clustered at the household level) in parentheses. The dependent variable is an indicator variable of co-residence, that is living with children or relatives. *** significant at 1 percent level, ** significant at 5 percent level, * significant at 10 percent level.

Table 6 Sub-samples of Asian and Hispanic/Latino immigrants conditional on family income

Sub-sample	High family income				Low family income				Difference
	Co-residence				Co-residence				
		Marginal effect		Marginal effect		Marginal effect		Marginal effect	p-value
Asian	0.325*** (3.636)	0.013			0.584*** (4.955)	0.049			0.080
SAsian			-0.066 (-0.576)	-0.002			0.001 (0.008)	0.000	0.758
Hispanic	0.244** (2.037)	0.010			0.372*** (4.140)	0.038			0.395
SHispanic			-0.007 (-0.102)	-0.000			0.276*** (3.506)	0.029	0.007
People in Caucasian neighborhood household	0.105 (0.915)	0.005	0.123 (1.075)	0.006	0.229* (1.801)	0.029	0.251** (1.990)	0.032	
Family income in Caucasian neighborhood household	-0.045*** (-3.964)	-0.002	-0.041*** (-3.611)	-0.002	-0.042*** (-2.816)	-0.005	-0.031** (-2.121)	-0.004	
Control Variables									
Household Demographics	Yes		Yes		Yes		Yes		
Household Locations	Yes		Yes		Yes		Yes		
House Characteristics	Yes		Yes		Yes		Yes		
Observations	31625		31625		13157		13157		
Pseudo R^2	0.058		0.056		0.126		0.122		

Note: This table reports the coefficients from Probit regressions based on equation (6) and equation (7) along with robust standard errors (clustered at the household level) in parentheses. The dependent variable is an indicator variable of co-residence, that is living with children or relatives. *** significant at 1 percent level, **significant at 5 percent level, *significant at 10 percent level.

Table 7 Sub-samples of Asian and Hispanic/Latino immigrants conditional on education level

Sub-sample	High-level education				Low-level education				Difference
	Co-residence				Co-residence				
		Marginal effect		Marginal effect		Marginal effect		Marginal effect	p-value
Asian	0.401*** (5.323)	0.026			0.674*** (3.443)	0.030			0.193
SAsian			-0.034 (-0.336)	-0.003			-0.044 (-0.133)	-0.004	0.976
Hispanic	0.207** (2.169)	0.015			0.286*** (2.746)	0.018			0.576
SHispanic			0.083 (1.401)	0.007			0.110 (1.151)	0.008	0.811
People in Caucasian neighborhood household	0.155* (1.676)	0.014	0.169* (1.818)	0.015	0.231 (1.436)	0.018	0.249 (1.558)	0.020	
Family income in Caucasian neighborhood household	-0.043*** (-4.524)	-0.004	-0.038*** (-3.958)	-0.003	-0.001 (-0.057)	-0.000	0.008 (0.416)		0.001
Control Variables									
Household Demographics	Yes		Yes		Yes		Yes		
Household Locations	Yes		Yes		Yes		Yes		
House Characteristics	Yes		Yes		Yes		Yes		
Observations	32886		32886		11896		11896		
Pseudo R^2	0.051		0.048		0.039		0.034		

Note: This table reports the coefficients from Probit regressions based on equation (6) and equation (7) along with robust standard errors (clustered at the household level) in parentheses. The dependent variable is an indicator variable of co-residence, that is living with children or relatives. *** significant at 1 percent level, **significant at 5 percent level, *significant at 10 percent level.

Table 8 Sub-samples of Asian and Hispanic/Latino immigrants conditional on employment status

Sub-sample	Employment				Non-employment				Difference
	Co-residence				Co-residence				
		Marginal effect		Marginal effect		Marginal effect		Marginal effect	p-value
Asian	0.388*** (4.979)	0.023			0.627*** (4.219)	0.022			0.154
SAsian			-0.065 (-0.611)	-0.005			0.025 (0.122)	0.001	0.694
Hispanic	0.180** (2.342)	0.012			0.579*** (4.133)	0.021			0.012
SHispanic			0.084 (1.488)	0.006			0.167 (1.626)	0.009	0.475
People in Caucasian neighborhood household	0.188** (2.038)	0.015	0.194** (2.105)	0.016	0.144 (0.966)	0.008	0.191 (1.276)	0.012	
Family income in Caucasian neighborhood household	-0.045*** (-4.470)	-0.004	-0.039*** (-3.918)	-0.003	-0.016 (-1.059)	-0.001	-0.009 (-0.586)	-0.001	
Control Variables									
Household Demographics	Yes		Yes		Yes		Yes		
Household Locations	Yes		Yes		Yes		Yes		
House Characteristics	Yes		Yes		Yes		Yes		
Observations	35584		35584		16733		16733		
Pseudo R^2	0.059		0.057		0.036		0.029		

Note: This table reports the coefficients from Probit regressions based on equation (6) and equation (7) along with robust standard errors (clustered at the household level) in parentheses. The dependent variable is an indicator variable of co-residence, that is living with children or relatives. *** significant at 1 percent level, **significant at 5 percent level, *significant at 10 percent level.

Table 9 First- and second-generation immigrants in both baseline and social/contextual models (self-employment)

	Baseline model				Contextual model			
	Co-residence				Co-residence			
		Marginal effect		Marginal effect		Marginal effect		Marginal effect
Asian	0.405*** (5.895)	0.025			0.433*** (6.252)	0.026		
SAsian			-0.072 (-0.753)	-0.007			-0.051 (-0.537)	-0.005
Hispanic	0.277*** (4.105)	0. 019			0.265*** (3.918)	0.018		
SHispanic			0.114** (2.286)	0.009			0.097* (1.939)	0.008
Selfemployment	-0.103*** (-3.171)	-0.009	-0.103*** (-3.175)	-0.010	-0.104*** (-3.205)	-0.010	-0.104*** (-3.221)	-0.010
People in Caucasian household in same MSA					0.174** (2.171)	0.015	0.192** (2.392)	0.017
Family income of Caucasian household in same MSA					-0.037*** (-4.329)	-0.003	-0.031*** (-3.643)	-0.003
Control Variables								
Household Demographics	Yes		Yes		Yes		Yes	
Household Locations	Yes		Yes		Yes		Yes	
House Characteristics	Yes		Yes		Yes		Yes	
Observations	44782		44782		44782		44782	
Pseudo R^2	0.046		0.043		0.047		0.044	

Note: This table reports the coefficients from Probit regressions based on equation (6) and equation (7) along with robust standard errors (clustered at the household level) in parentheses. The dependent variable is an indicator variable of co-residence, that is living with children or relatives. *** significant at 1 percent level, **significant at 5 percent level, *significant at 10 percent level.

Table 10 Sub-samples of Asian and Hispanic/Latino immigrants in adult households (no kids under 18 years old)

	Baseline model				Social interaction model			
	Co-residence				Co-residence			
		Marginal effect		Marginal effect		Marginal effect		Marginal effect
Asian	0.440*** (5.600)	0.043			0.461*** (5.832)	0.045		
SAsian			-0.000 (-0.002)	-0.000			0.015 (0.132)	0.002
Hispanic	0.223*** (2.824)	0.025			0.205*** (2.590)	0.024		
SHispanic			0.123** (2.091)	0.015			0.108* (1.820)	0.013
Person in Caucasian neighborhood household					0.194** (2.180)	0.026	0.207** (2.331)	0.028
Family income in Caucasian neighborhood household					-0.029*** (-3.156)	-0.004	-0.023** (-2.523)	-0.003
Control Variables								
Household Demographics	Yes		Yes		Yes		Yes	
Household Locations	Yes		Yes		Yes		Yes	
House Characteristics	Yes		Yes		Yes		Yes	
Observations	24532		24532		24532		24532	
Pseudo R^2	0.088		0.086		0.089		0.086	

Note: This table reports the coefficients from Probit regressions based on equation (6) and equation (7) along with robust standard errors (clustered at the household level) in parentheses. The dependent variable is an indicator variable of co-residence, that is living with children or relatives. *** significant at 1 percent level, **significant at 5 percent level, *significant at 10 percent level.

Table 11 Sub-samples of Asian and Hispanic/Latino immigrants conditional on local housing market price growth rate.

	First-generation Immigrants				Second-generation Immigrants			
	Co-residence				Co-residence			
		Marginal effect		Marginal effect		Marginal effect		Marginal effect
Asian	0.384*** (5.512)	0.025	0.349*** (4.55)	0.025				
Hispanic	0.261*** (3.845)	0.018	0.225*** (3.06)	0.019				
SAsian					-0.060 (-0.630)	-0.005	-0.048 (-0.435)	-0.004
SHispanic					0.121** (2.434)	0.010	0.134** (2.362)	0.010
Housing price growth rate	0.157* (1.757)	0.013	0.263 (1.643)	0.023	0.286*** (3.239)	0.025	0.283*** (3.215)	0.025
*Asian * HPI*			-0.180 (-0.799)	-0.016				
*Hispanic * HPI*			-0.185 (-0.762)	-0.016				
*SAsian * HPI*							0.615 (0.189)	0.053
*SHispanic * HPI*							0.799 (0.481)	0.069
Control Variables								
Household Demographics	Yes		Yes		Yes		Yes	
Household Locations	Yes		Yes		Yes		Yes	
House Characteristics	Yes		Yes		Yes		Yes	
Observations	45100		45100		45100		45100	
Pseudo R^2	0.045		0.0520		0.042		0.043	

Table 12 The effect of duration on immigrants' co-residence behavior

	Asian Immigrants				Hispanic Immigrants			
	Co-residence				Co-residence			
		Marginal effect		Marginal effect		Marginal effect		Marginal effect
Less than 10 years	0.555*** （3.194）	0.030			0.253* (1.726)	0.018		
11 to 30 years	0.516*** (6.393)	0.030			0.409*** (5.243)	0.026		
More than 30 years	0.373*** (3.186)	0.023			0.279*** (2.640)	0.020		
Second-generation			-0.091 (-0.956)	-0.008			0.049 (0.772)	0.004
Control Variables								
Household Demographics	Yes		Yes		Yes		Yes	
Household Locations	Yes		Yes		Yes		Yes	
House Characteristics	Yes		Yes		Yes		Yes	
Observations	42253		42253		42370		31804	
Pseudo R^2	0.045		0.041		0.042		0.025	

Note: This table reports the coefficients from Probit regressions based on equation (8) along with robust standard errors (clustered at the household level) in parentheses. The dependent variable is an indicator variable of co-residence, that is living with children or relatives. *** significant at 1 percent level, **significant at 5 percent level, *significant at 10 percent level.

Table 13 The effect of duration on immigrants' co-residence behavior (alternative duration specifications)

	Asian Immigrants				Hispanic Immigrants			
	Co-residence				Co-residence			
		Marginal effect		Marginal effect		Marginal effect		Marginal effect
Less than 15years	0.635*** (5.251)	0.030			0.184 (1.263)	0.013		
16 to 35years	0.650*** (5.314)	0.030			0.292*** (2.849)	0.019		
More than 35 years	0.245* (1.653)	0.016			0.187 (1.431)	0.013		
Second generation			-0.091 (-0.956)	-0.008			0.049 (0.772)	0.004
Control Variables								
Household Demographics	Yes		Yes		Yes		Yes	
Household Locations	Yes		Yes		Yes		Yes	
House Characteristics	Yes		Yes		Yes		Yes	
Observations	31702		42253		31804		31804	
Pseudo R^2	0.031		0.041		0.026		0.025	

Note: This table reports the coefficients from Probit regressions based on equation (8) along with robust standard errors (clustered at the household level) in parentheses. The dependent variable is an indicator variable of co-residence, that is living with children or relatives. *** significant at 1 percent level, **significant at 5 percent level, *significant at 10 percent level.

Table 14 Location selection on co-residence behavior

	Nearest neighbor matching		Three-nearest neighbor matching		Radius matching (r= 0.001)		Kernel matching	
	ATT	t-value	ATT	t-value	ATT	t-value	ATT	t-value
Full sample	0.025	7.237***	0.025	8.679***	0.023	8.862 ***	0.023	8.944***
First-generation Asian Immigrants	0.021	1.742*	0.021	2.156**	0.017	1.707*	0.025	2.920***
First-generation Hispanic Immigrants	0.016	1.472	0.014	1.508	0.018	2.039**	0.015	1.787*
Second-generation Asian Immigrants	-0.044	-1.057	-0.020	-0.562	-0.021	-0.422	0.018	0.577
Second-generation Hispanic immigrants	0.000	0.000	0.012	0.857	-0.017	1.189	0.012	0.994
First-generation Asian Immigrants who live in US less than 30 years								
	0.024	1.579	0.036	3.057***	0.028	2.208**	0.032	3.081***
First-generation Asian Immigrants who live in US more than 31 years								
	-0.008	-0.398	-0.005	-0.246	-0.013	-0.573	0.003	0.160

Notes: This table reports the estimated average treatment effect on the treated (whether the households live in the central urban area of primary cities of MSA or not) on the level of co-residence. The dependent variable is an indicator variable of co-residence, that is living with children or relatives. *** significant at 1 percent level, **significant at 5 percent level, *significant at 10 percent level.

Table 15 PSM results from baseline model and social/contextual model

	Baseline model				Contextual model			
	Co-residence				Co-residence			
		Marginal effect		Marginal effect		Marginal effect		Marginal effect
Asian	0.425*** (6.090)	0.032			0.496*** (7.727)	0.035		
SAsian			-0.066 (-0.681)	-0.007			-0.048 (-0.489)	-0.004
Hispanic	0.309*** (4.484)	0.025			0.341*** (5.592)	0.027		
SHispanic			0.115** (2.224)	0.011			0.096* (1.851)	0.008
People in Caucasian household in same MSA					0.209** (2.565)	0.021	0.226*** (2.762)	0.016
Family income of Caucasian household in same MSA					-0.037*** (-4.249)	-0.004	-0.031*** (-3.592)	-0.003
Control Variables								
Household Demographics	Yes		Yes		Yes		Yes	
Household Locations	Yes		Yes		Yes		Yes	
House Characteristics	Yes		Yes		Yes		Yes	
Observations	37459		37459		37459		37459	
Pseudo R^2	0.036		0.033		0.038		0.035	

Note: This table reports the coefficients from Probit regressions based on equation (6) and equation (7) along with robust standard errors (clustered at the household level) in parentheses after we considering the location selection bias. The dependent variable is an indicator variable of co-residence, that is living with children or relatives. *** significant at 1 percent level, ** significant at 5 percent level, * significant at 10 percent level.

Table 16 Co-resident rate of native residents in China based on CFPS

Dependent Variable	Full		Urban		Rural	
			Co-residence			
		Marginal effect		Marginal effect		Marginal effect
Chinese natives	0.261***	0.034	0.188***	0.023	0.342***	0.044
	(10.449)		(5.016)		(10.091)	
Household Demographics						
income	0.086***	0.011	0.163***	0.020	0.065***	0.008
	(6.376)		(6.270)		(4.150)	
hhsex	-1.231***	-0.170	-0.932***	-0.120	-1.481***	-0.212
	(-39.752)		(-21.899)		(-32.020)	
hhage	-0.040***	-0.005	-0.037***	-0.004	-0.045***	-0.006
	(-16.198)		(-11.789)		(-9.905)	
spoage	-0.011***	-0.001	-0.011***	-0.001	-0.009**	-0.001
	(-5.064)		(-4.322)		(-2.017)	
hhgrad	-0.038	-0.005	-0.064	-0.008	0.224	0.034
	(-0.612)		(-0.934)		(1.609)	
spoedu	-0.232***	-0.026	-0.263***	-0.028	-0.254	-0.027
	(-3.036)		(-3.217)		(-1.383)	
Household Locations						
East	0.063*	0.008	0.030	0.004	0.059	0.008
	(1.944)		(0.674)		(1.253)	
West	0.215***	0.030	0.221***	0.031	0.152***	0.020
	(6.623)		(4.005)		(3.533)	
House Characteristics						
value	0.007	0.001	0.038**	0.005	0.023*	0.003
	(0.668)		(2.172)		(1.667)	
Observations	23476		10434		13042	
Pseudo R^2	0.266		0.217		0.311	

Table 17 Sub-samples of Asian and Hispanic/Latino immigrants conditional on housing tenure

	Own				Rent			
	Co-residence				Co-residence			
		Marginal effect		Marginal effect		Marginal effect		Marginal effect
Asian	0.376*** (6.478)	0.024			0.355*** (7.380)	0.057		
SAsian			-0.071 (-0.863)	-0.007			-0.279*** (-3.612)	-0.064
Hispanic	0.301*** (5.133)	0.020			0.231*** (5.619)	0.041		
SHispanic			0.103** (2.337)	0.008			0.150*** (4.255)	0.027
People in Caucasian household neighborhood	0.128* (1.892)	0.011	0.150** (2.208)	0.013	0.470*** (7.280)	0.092	0.486*** (7.495)	0.096
Family income of Caucasian household neighborhood	-0.022*** (-3.295)	-0.002	-0.017*** (-2.578)	-0.001	-0.026*** (-4.293)	-0.005	-0.017*** (-2.901)	-0.003
Control Variables								
Household Demographics	Yes		Yes		Yes		Yes	
Household Locations	Yes		Yes		Yes		Yes	
House Characteristics	Yes		Yes		Yes		Yes	
Observations	63210		63210		30715		30715	
Pseudo R^2	0.038		0.035		0.157		0.156	

*Note: This table reports the coefficients from Probit regressions based on equation (6) and equation (7) along with robust standard errors (clustered at the household level) in parentheses. The dependent variable is an indicator variable of co-residence, that is living with children or relatives. *** significant at 1 percent level, **significant at 5 percent level, *significant at 10 percent level.*

Table 18 Sub-samples of Asian and Hispanic/Latino immigrants conditional on age-based headship

	"Young" headship				"Old" headship			
	Co-residence				Co-residence			
		Marginal effect		Marginal effect		Marginal effect		Marginal effect
Asian	0.258*** (5.474)	0.029			0.357*** (5.609)	0.027		
SAsian			-0.102* (-1.666)	-0.014			-0.026 (-0.233)	-0.003
Hispanic	0.133*** (3.241)	0.016			0.134** (2.329)	0.012		
SHispanic			0.175*** (5.232)	0.021			0.019 (0.378)	0.002
People in Caucasian household neighborhood	0.327*** (5.294)	0.043	0.306*** (4.926)	0.040	0.163** (2.258)	0.016	0.184** (2.551)	0.018
Family income of Caucasian household neighborhood	-0.047*** (-8.037)	-0.006	-0.040*** (-7.005)	-0.005	-0.025*** (-3.682)	-0.002	-0.020*** (-3.010)	-0.002
Control Variables								
Household Demographics	Yes		Yes		Yes		Yes	
Household Locations	Yes		Yes		Yes		Yes	
House Characteristics	Yes		Yes		Yes		Yes	
Observations	47371		47371		47600		47600	
Pseudo R^2	0.195		0.195		0.025		0.023	

Note: This table reports the coefficients from Probit regressions based on equation (6) and equation (7) along with robust standard errors (clustered at the household level) in parentheses. The dependent variable is an indicator variable of co-residence, that is living with children or relatives. *** significant at 1 percent level, **significant at 5 percent level, *significant at 10 percent level.

Appendix A

Table 19 First- and second-generation immigrants in both baseline and social/contextual models

	Immigrant Density				Regional Indicator			
	Co-residence				Co-residence			
		Marginal effect		Marginal effect		Marginal effect		Marginal effect
Asian	0.358*** (5.274)	0.024			0.406*** (5.918)	0.025		
SAsian			-0.140 (-1.482)	-0.014			-0.068 (-0.719)	-0.004
Hispanic	0.226*** (3.432)	0.017			0.277*** (4.117)	0.019		
SHispanic			0.051 (1.045)	0.004			0.117** (2.343)	0.008
Immigrantdensity	0.665*** (6.576)	0.058	0.664*** (6.547)	0.058				
Midwest					0.180*** (5.026)	0.014	0.168*** (4.662)	0.013
South					0.207*** (7.055)	0.016	0.197*** (6.610)	0.016
West					0.301*** (10.487)	0.023	0.293*** (10.097)	0.023
Control Variables								
Household Demographics	Yes		Yes		Yes		Yes	
Household Locations	Yes		Yes		Yes		Yes	
House Characteristics	Yes		Yes		Yes		Yes	
Observations	44782		44782		44782		44782	
Pseudo R^2	0.040		0.038		0.046		0.043	

Note: This table reports the coefficients from Probit regressions based on equation (6) and equation (7) along with robust standard errors in parentheses. The dependent variable is an indicator variable of co-residence, that is living with children or relatives. *** significant at 1 percent level, ** significant at 5 percent level, * significant at 10 percent level.

Appendix B

Samples are classified into two groups: (1) The treatment group, including Asian and Hispanic immigrants' households who live in the central city in MSA, and (2) the control group, including Asian and Hispanic immigrant households who live outside central city. We apply propensity score matching (PSM) method developed by Rosenbaum and Rubin (1983). Using this approach, we can obtain propensity scores (PS), which measures treatment and control group similarities in our covariates (e.g., household demographics, household locations and house characteristics). In particular, we consider two nearest-neighbor matching estimators with n=1 and n=3, radius matching estimators with a tight radius (r=0.001), and a kernel matching estimator. We implement the nearest neighbor matching approach, radius matching and kernel matching to determine the region of common support. As Lin, Liu and Xie (2015) discussed, the unconfoundedness condition and the common support assumption are the two import condition to judge matching sufficiency.

Common support

Figure 3 shows the kernel density functions of the treatment and control groups of the full sample. The algorithms select households from the control group to match those in the treatment group, based on Propensity scores. Clearly, the kernel density functions show sufficient overlap in the two groups. Further, we split the full sample into first-generation immigrant households and second-generation households, respectively. Results indicate that characteristics of the variables in both first-generation immigrants and second-generation immigrants are similar after matching. In summary, both figures show evidence of overlapping propensity score distributions. We also use radius matching and kernel matching. The results are similar and are available when requested.
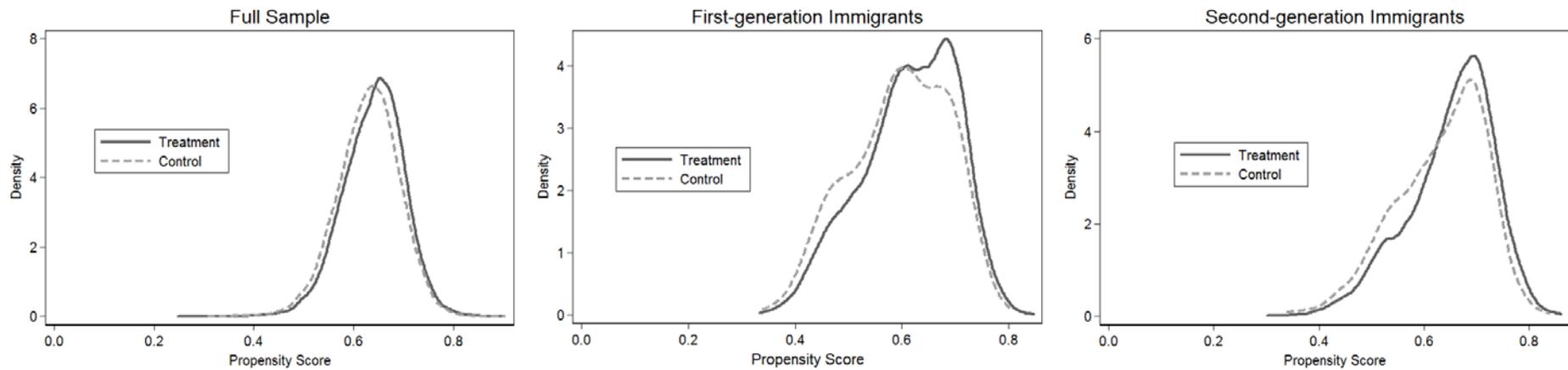
Figure 3 Kernel Density of treatment and control groups

Un-confoundedness Condition.

Table 20 presents the observable covariates we use to match treatment and control groups. And, Table 21 illustrates the mean differences in household demographic characteristics, household location, and house characteristics between households who live in the central city and households who live outside central city are statistically insignificant. This confirms that after matching, the treatment and control groups are comparable with respect to measured covariates. Further, we parcel our full sample into first- and second-generation immigrant subsamples and still find location self-selection is unlikely to have a linear relationship with modeled covariates. It is evident that the un-confoundedness condition holds.

Table 20 Definition of observable variables in PSM models

Variables	Definition
Selection Variable:	
Central	Immigrants live in urban area of central cities in MSA
Matching Variables:	
Race	
Asian	Asian Immigrants
Hispanic	Hispanic immigrants
Household Demographics	
hhsex	Gender of Householder
age	Average age of person in household
hhage	Age of householder
grad	Average education level of person in household
hhgrad	Education level of householder
income	Family income
Household Locations	
midwest	Immigrants live in Midwest region
south	Immigrants live in South region
west	Immigrants live in West region
House Characteristics	
loan	Whether immigrants have a mortgage
term	Term of 1st mortgage
value	Current market value of unit

Table 21 Matching quality examination based on nearest neighborhood PSM

	Full-sample				First-generation immigrants				Second-generation immigrants			
	Central city	Rural area	t-statistics	p-value	Central city	Rural area	t-statistics	p-value	Central city	Rural area	t-statistics	p-value
Race												
Asian	0.063	0.062	0.26	0.791	0.532	0.515	1.13	0.258	0.172	0.186	0.62	0.534
Hispanic	0.095	0.095	0.14	0.888	0.475	0.493	-1.22	0.224	0.837	0.844	-0.53	0.597
Household Demographics												
hhsex	0.388	0.383	1.01	0.313	0.361	0.386	-1.80	0.072	0.390	0.384	0.32	0.751
age	44.446	44.375	0.46	0.643	41.852	41.830	0.05	0.963	41.239	41.299	-0.09	0.924
hhage	50.329	50.268	0.52	0.603	48.706	48.570	0.42	0.678	46.789	47.158	-0.72	0.473
grad	41.151	41.184	-1.12	0.264	40.506	40.514	-0.07	0.942	40.786	40.641	1.21	0.225
hhgrad	41.820	41.829	-0.33	0.739	41.016	41.019	-0.02	0.982	41.415	41.264	1.35	0.176
income	11.331	11.327	0.58	0.564	11.214	11.197	0.65	0.515	11.328	11.363	-1.11	0.268
Household Locations												
midwest	0.129	0.129	0.00	1.000	0.059	0.055	0.56	0.574	0.050	0.041	1.11	0.266
south	0.250	0.245	1.48	0.139	0.086	0.084	0.21	0.836	0.122	0.116	0.48	0.633
west	0.277	0.275	0.45	0.651	0.222	0.222	0.31	0.753	0.181	0.203	-1.47	0.140
House Characteristics												
loan	0.069	0.063	2.45	0.014	0.047	0.043	0.70	0.486	0.066	0.064	0.16	0.875
term	26.425	26.472	-0.74	0.459	26.679	26.806	-0.65	0.518	27.52	27.515	0.02	0.982
value	0.300	0.297	1.07	0.285	0.362	0.357	0.47	0.638	0.324	0.333	-0.68	0.498

Appendix C

Table 22 Definition of variables in China Family Panel Studies

Variables	Definition
Selection Variable:	
Co-residence	There are at least three family members living in one household with at least one considered a grandfather or grandmother
Matching Variables:	
Chinese natives	The age of householder is from 30 years old to 51 years old
Household Demographics	
income	Family income
hhsex	gender of householder, $hhsex = 1$ means householder is female, $hhsex = 0$ means householder is male
hhage	Age of householder
spoage	Age of householder's spouse
hhgrad	Education level of householder, $hhgrad = 1$ higher degree than high school level education
	$hhgrad = 0$ high school or lower than high school degree level education
spoedu	Education level of householder's spouse, $spoedu = 1$ higher degree than high school level education
	$spoedu = 0$ high school or lower than high school degree level education
Household Locations	
East	Households located in East region
West	Households located in West region
House Characteristics	
value	Current market value of unit

Note: We separate provinces into Eastern, Middle and Western regions based on the National Bureau of Statistics of China partition criterion. The reference region is the Middle region including Shanxi, Jilin, Heilongjiang, Anhui, Jiangxi, Henan, Hubei, Hunan, Eastern region includes Beijing, Tianjing, Hebei, Liaoning, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong; and Western region includes Guangxi, Chongqing, Sichuan, Guizhou, Yunnan, Shan'xi, Gansu.