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Neighborhood Amenities, Satisfaction, and Perceived Livability of Foreign-Born and Native-Born U.S. Residents

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Abstract. Neighborhood amenities and satisfaction have been widely discussed in previous research, but little attention has focused on how they relate to residents' nativity status. This research will contribute to the scanty literature in this specific matter and help us further understand the place identity of immigrants. Using the 2007 American Housing Survey, bivariate and multivariate regression analysis, this research finds that the difference in neighborhood amenities between native-born and foreign-born residents reflects the differences in demand for favorable amenities and convenience, respectively. Compared to native-born residents, foreign-born residents tend to live in neighborhoods with less desirable amenities, but residents are more satisfied with the livability of their neighborhoods. However, when controlling for residential characteristics the difference in perceived neighborhood livability becomes insignificant. This indicates that consistent with some of the previous studies socioeconomic characteristics, instead of nativity status, determine the disparities in neighborhood amenities, neighborhood satisfaction, and perceived neighborhood livability among foreign-born and native-born residents.

Keywords: *Native-born, foreign-born, neighborhood amenities, neighborhood satisfaction, neighborhood livability*

Introduction

As one of the major population growth sources in the United States, immigrants continue to have profound impacts on the socioeconomic characteristics of the American society. During the process of becoming accustomed to the relatively new living and working environments, immigrants face various challenges in finding their ideal housing and neighborhoods, partly due to unfamiliarity with a new system, and financial and/or language barriers (Lichter and Johnson 2006; Mahalingham 2006; Organista et al. 1998). Immigrants' choices and decision-making processes about where to live might be different from non-

immigrants because of their unique socioeconomic characteristics and needs. Socioeconomic status, in addition to the desire for a community similar to that in the home country, a sense of place, and being close to work, friends and relatives, complicates the residential preference theories of immigrants (Mazumdar et al. 2002; Murdie and Teixeira 2003).

Neighborhood amenities and subjective neighborhood perceptions relate to senses of place and neighborhood satisfaction levels of residents (Freeman 2001; Furr et al. 2005; Lansing et al. 1964, 1970; Lund 2002; Shaw 1994; Yang 2008). Although different people have distinctive views about pleasant (and unpleasant) environmental amenities, people share common experiences about many of those amenities. Based on theories in environmental psychology (Abt Associates 2006; Staples et al. 1999), desirable amenities usually include green space, newer buildings, availability of community recreational facilities, proximity to water bodies, and others. Undesirable neighborhood amenities include, but are not limited to, the following: litter, noise, crime, junk and trash accumulation, and undesirable land uses (such as proximity to factories, highways, or airports). Undesirable amenities tend to contribute to lower levels of neighborhood satisfaction from residents (Galster and Hesser 1981; Miller et al. 1980). Neighborhood satisfaction is a significant predictor of mental health, life satisfaction, perceived safety, and the likelihood to move (Baba and Austin 1989; Campbell et.al. 1976). Frequent migration can increase mental anxieties, especially among immigrants with significant language and cultural barriers, less social support and those who experience discrimination (Ritsner and Ponizovsky 1999). Measurements of neighborhood satisfaction might be biased if people are unsatisfied, but are unable to move. Thus, in this situation, immigrants may passively perceive that they are satisfied.

Generalized neighborhood satisfaction theory is well developed and research in locational attainment and assimilation of immigrants is abundant. However, few scholars have explored neighborhood amenities, environmental attitudes, and satisfaction of foreign-born residents and immigrants (Adeola 2007; Abt Associates 2006; Furr et al. 2005; Hunter 2000), and none compared how native-born and foreign-born residents differ in terms of neighborhood amenities and satisfaction. Locational attainment, status attainment, countries of origin, and assimilation determine housing and neighborhood preferences of immigrants (Woldoff 2003; Waters 1999). It is not clear whether foreign-born residents and

immigrants live in neighborhoods with fewer desirable amenities and thus are less satisfied with their neighborhoods. Given that foreign-born individuals and immigrants play significant roles in the American society, knowing more about their residential environments and neighborhood satisfaction will help policy makers improve their quality of life. Improvements can be associated with neighborhood attributes, which in turn might help decrease their tendency to move, increase their place attachment and identity, and ease some of the anxieties associated with frequent migration (Hernández et al. 2007**)**.

This paper links the classical theories in residential preferences of immigrants to the outcomes (measured by satisfaction and perceived livability) of these preferences and will expand our understanding of the different psychological reactions to the built environment between native-born and foreign-born residents. The American Housing Survey (AHS) is the only national dataset that includes information about nativity and neighborhood characteristics and perceptions. Although AHS data might not accurately represent the structure of residents in the U.S., housing preferences usually reflect the differences in demographic differences. Future research will explore more detailed idiographic behavior among native-born and foreign-born residents in terms of residential satisfaction and how the behavior relates to migration and housing market equilibrium. The paper starts with a brief overview of locational attainment models and neighborhood satisfaction theories related to nativity status, followed by simple statistical summaries of the dataset. Then, descriptive and Chi-Square analyses of neighborhood amenities and itemized neighborhood satisfaction are presented based on nativity status. An OLS (Ordinary Least Square) regression model is used to measure how neighborhood amenities, satisfaction, and residential characteristics (such as race, education, marital status, and countries of origin) contribute to the level of overall perceived neighborhood livability.

Theoretical framework and hypotheses

Residential preferences of immigrants

There is abundant literature and research regarding residential mobility decisions and how individuals or residents achieve maximum satisfaction under the constraints of budgetary and social preferences (Bartik et al. 1992; Dynarski 1986; Weinberg et al. 1981). Research has found that housing outcomes of immigrants are largely determined by their socioeconomic status, especially income and

education levels, rather than nativity or immigration status (Friedman and Rosenbaum 2004).

Spatial assimilation theory establishes a solid foundation for locational preferences or attainment of immigrants or foreign-born populations (Massey 1985). Early immigrants tended to settle in neighborhoods and enclaves conveniently located close to various amenities and employment centers. Later on immigrants began to move out of these enclaves to seek more desirable neighborhoods. The spatial pattern switching from inner city, low-income enclaves to suburban, relatively more affluent places has generated an enormous impact on individual residents and urban forms (Massey 1985). Locational attainment models (Alba and Logan 1991, 1992, 1993), status attainment models (Blau and Duncan 1967), and place stratification models (Alba and Logan 1992) all explain how residential characteristics and preferences lead to different housing and locational preferences. These models agree that the household "sorting" process departing from the inner-city, ethnic enclaves to the wealthier, suburban neighborhoods can be explained by the socio-economic and assimilation statuses of immigrants and their desires to obtain more residential amenities.

Neighborhoods have become multi-ethnic and more diverse than ever before and the spatial patterns of immigrants have become more complicated (Clark and Patel 2004; Fasenfest et al. 2004). Suburban and inner city dichotomy still exists, however, both places are accepting immigrants with various income levels and the dichotomous division has become increasingly blurred. Inner city areas are no longer the first choices for immigrants. Certain immigrant groups, such as Asians, have predominantly chosen suburbs as their primary place of residence (Woldoff 2003; Waters 1999). Although integration between native-born and foreign-born population has gradually increased and the geographic distribution of new immigrants is more dispersed, immigrants tend to live in more concentrated areas or enclaves compared to the native-born population, partly due to cultural and language barriers (Lichter and Johnson 2006).

When considering the effects of race and ethnicity on locational attainment, in general Black groups and native Blacks have a spatial disadvantage compared to non-Black groups and non-Black immigrants (Adelman et al. 2001). White and Sassler (2000) argue that ethnicity, instead of immigration status, is the dominant factor to explain the differences in locational attainment choices and preferences. In certain areas residential segregation is still of significant social and policy concern (Jackson 2004).

Nativity, neighborhood amenities, satisfaction, and perceived livability

Neighborhood satisfaction is defined as a perceived status of comfort or discomfort of the residents within a neighborhood. Residents' satisfaction with the built environment is measured by resident characteristics, housing attributes, and neighborhood and community characteristics (Campbell et al. 1976). Models of residential satisfaction often incorporate an individual's subjective perception of satisfaction and objective housing and neighborhood attributes which might be related to satisfaction. The theoretical framework of neighborhood satisfaction has changed little since its initial conceptualization in the 1960s.

Based on Foote et al. (1960) residential satisfaction, which can be classified into housing, neighborhood, and other satisfaction, had several research themes since the 1960s. These themes indicate that homeowners tend to be more satisfied with their neighborhoods (Austin and Baba 1990; Baba and Austin 1989; Galster and Hesser 1981; Michelson 1977; Rohe and Stewart 1996; Shaw 1994) and neighborhood social characteristics are significant factors in determining residential satisfaction in certain neighborhoods (Foote et al. 1960; Keller 1968; Moriarty 1974)1. In addition to homeownership, characteristics including education, age or life cycle stage, the adequacy of space, the physical conditions of the unit, neighborhood satisfaction, and the age of the housing units, are significantly related to housing satisfaction (Galster and Hesser 1981; Galster 1987b; Ha and Weber 1991; Varady 1983). Housing satisfaction is then found to be positively related to neighborhood satisfaction (Galster and Hesser 1981; Ha and Weber 1991)2.

Neighborhood and community attributes, such as residential density measured in different ways, size of the community, the location of the residence in a metropolitan area, and neighborhood socioeconomic characteristics are also incorporated into the modeling of residential satisfaction (Campbell et al. 1976; Dillman et al. 1979; Doling 1976; Galster 1987a; Michelson 1977; Uyeki 1985). Improvements in neighborhood conditions can promote residential satisfaction and

[1] The proportion of homeowners in a neighborhood is also found to be positively related to neighborhood satisfaction (Galster, 1987; Varady, 1986; Rohe and Basolo, 1997; Rohe and Stegman, 1994).

[2] There are mixed or insignificant results on the effects of education, income, race, and length of tenure on neighborhood satisfaction (Austin and Baba, 1990; Baba and Austin, 1989; Galster, 1987a).

neighborhood stability, which is defined by longer length of tenure, increasing property values, and improved physical and socioeconomic conditions (Rohe and Stewart 1996). Perceived problems in the neighborhood are negatively related to neighborhood satisfaction, while perceived livability positively relates to neighborhood satisfaction (Galster and Hesser 1981; Miller et al. 1980).

As stated in earlier sections, much of the empirical work related to the locational attainment and neighborhood satisfaction models and theories did not explain the differences in neighborhood amenities, perception, and satisfaction of foreign-born populations, particularly the differences between native-born and foreign-born residents. Locational attainment models explained that certain factors, such as ethnicity, racial background, and income and economic status (rather than nativity status) determine where immigrants choose to live (Adelman et al. 2001; Rosenbaum et al. 1999; White and Sassler 2000; Alba et al. 2000). It is not clear which kinds of neighborhoods foreign-born populations tend to live in and whether they are less satisfied with their neighborhoods compared to native-born residents. There is a missing linkage between locational attainment models and neighborhood satisfaction of immigrants and how they differ from native-born residents. In particular the aspects of perception and satisfaction of immigrants are under-investigated by scholars. Little research has focused on these issues except Abt Associates (2006) and Furr et al. (2005).

Abt Associates (2006), which uses the American Housing Survey metropolitan data, found that most residents react similarly to desirable or undesirable neighborhood amenities. Crime and inadequate police protection are perceived more by whites and African-Americans than other racial or ethnic groups (Abt Associates 2006). Abt Associates (2006) also found that open space is less likely to be close to minority homes; African-American residents tend to live nearby abandoned or vacant buildings; minority renters are more likely to live in a neighborhood where roads need major repairs, and neighborhood satisfaction is largely determined by homeownership. Furr et al. (2005) investigated neighborhood crime perception of former Soviet Union refugees and found that these refugees are less satisfied with their neighborhoods, yet have a higher level of perceived safety compared to the general public. However, none of these studies have systematically explored the differences of neighborhood amenities and satisfaction between native- and foreign-born residents.

Hypotheses

After comparing neighborhood amenities between foreign-born and native-born residents this research intends to argue that resident characteristics, neighborhood characteristics (actual and perceived), and neighborhood satisfaction contribute to perceived livability levels. Higher satisfaction and livability levels will reduce residents' tendencies to move, thus stabilizing their quality of life. This is particularly important for immigrants who are familiarizing themselves with a new environment. This paper hypothesizes that:

1. Foreign-born residents tend to live in neighborhoods in close proximity to employment, schools, and shopping, while native-born residents tend to live in close proximity to water, open space, and recreational facilities.
2. Compared to native-born residents, and after controlling for residential characteristics, foreign-born immigrants tend to live in neighborhoods with less desirable amenities, hence they are less satisfied and are less likely to rate their neighborhoods as more livable.

Data and methodology

The American Housing Survey (AHS) is the largest longitudinal national housing dataset administered by the U.S. Department of Housing and Urban Development (HUD 2004). AHS is the only national dataset that includes neighborhood quality and satisfaction which can be identified based on nativity status[3]. This paper collapsed the amenities and satisfaction into categories such as infrastructure and physical attributes, safety, business accessibility, public services, and neighborhood housing. Since the number of observations based on countries of origin is small for most countries this research aggregates the countries based on regions (Asia, Middle East, North America, Africa, Australia, Latin America, and Europe) to measure how countries of origin are related to neighborhood amenities and satisfaction[4]. This research focuses on the

[3] Most of the traditional models of residential preferences of immigrants did not distinguish between immigrants and foreign-born residents/population. Strictly speaking, immigrants and foreign-born population are different, yet inclusive concepts. Foreign-born population includes immigrants (permanent residents and naturalized citizens), legal aliens (either resident or non-resident) with non-immigration visas, and illegal aliens. This paper uses the concept of foreign-born residents instead of immigrants to capture a broader spectrum of residents with different immigration statuses.

4 Since the focus of the AHS is in housing units and their occupants the samples were drawn based on the type of housing, instead of the structure and characteristics of residents, the dataset might not be a good representation of residents compared to other datasets such as the American Community Survey (Eggers, 2007). However, it is the only available national

following sets of variables: perceived neighborhood livability measured by a Likert scale from 1-10; itemized satisfaction with public transportation, police protection and shopping; neighborhood attributes such as infrastructure, safety amenities, business accessibility, public services and neighborhood housing; residential socioeconomic characteristics such as age, race, income, educational status, and countries of origin. Most of the variables are discrete data measured with a Likert scale.

In the 2007 American Housing Survey among all the residents which identified their citizenship status, about 91% (89,259) are U.S. citizens. Among all the residents 81% (79,856) are native-born, born in the U.S., Puerto Rico or U.S. outlying area, or born abroad of U.S. parents. About 19% (18,473) are foreign-born regardless their citizenship status. Among the 18,473 foreign-born residents, 9,403 are U.S. citizens and 9,070 are non-citizens. The average length foreign-born residents have been in the United States is 21 years. Compared to native-born residents (with a mean age of 44 years old), foreign-born residents tend to be older with a mean age of 48 years old. Foreign-born residents have a lower median household income ($67,233) than that of the native-born residents ($77,027). Roughly 74% of native-born populations are homeowners, compared to 57% of foreign-born residents. Foreign-born residents who are not citizens have a lower homeownership rate than those who are citizens. Compared to native-born residents, education levels of the foreign-born residents are highly uneven and skewed to the lowest and the highest levels. This means that a larger portion of the foreign-born population is either least educated (with high school diplomas or lower,) or highly educated (such as with a graduate school degree). For the entire population of the American Housing Survey national data the racial breakdowns are as follows: 82% White, 12% Black, 4% Asian, and 2% of other racial background. Among foreign-born residents 52% are of Hispanic origin, compared to 7% of native-born Hispanics. Among foreign-born residents 2,215 are from Europe, 3,428 from Asia, 717 from the Middle East, 320 from North America/Canada, 9,284 from Latin America, 496 from Africa, and 42 from Australia (see Table 1).

dataset measuring quality and opinions of neighborhoods. AHS has been used to explore satisfaction among different ethnic and racial groups (Abt Associates, 2006), and residents in gated and non-gated communities (Chapman and Lombard, 2006).

Table 1. Descriptive statistics

Variable	# of Obs	Mean	St. Dev.	Freq (value=1)
Dependent Variable: Perceived Neighborhood Livability (1-10)	94,557	8.05	1.79	
Intercept				
Neighborhood Satisfaction				
Neighborhood Public Transportation Satisfactory (1: satisfied; 0: unsatisfied)	95,532			51,940 (54.37%)
Neighborhood Police Protection Satisfactory (1: satisfied; 0: unsatisfied)	95,693			88,365 (92.34%)
Neighborhood Public Elementary School Satisfactory (1: satisfied; 0: unsatisfied)	32,322			29,712 (91.93%)
Neighborhood Shopping Satisfactory (1: satisfied; 0: unsatisfied)	92,433			90,203 (97.59%)
Infrastructure and Physical Attributes				
Community Recreational Facilities Available (1: yes; 0: no)	98,329			38,517 (39.17%)
Open Green Spaces within 1/2 Block (1: yes; 0: no)	96,066			38,947 (40.54%)
Bodies of Water within 1/2 Block (1: yes; 0: no)	97,994			15,965 (16.29%)
Roads within 1/2 Block Need Repairs (1: major repair work; 2: minor repair work; 3: other)	94,319			5,430 (5.76%)
Railroad/Airport/4-Lane Highway within 1/2 Block (1: yes; 0: no)	96,106			15,085 (15.70%)
Parking Lots within 1/2 Block (1: yes; 0: no)	96,117			25,391 (26.42%)
Safety Amenities				
Walls/Fences surrounding Community (1: yes; 0: no)	97,605			8,698 (8.91%)
Business Accessibility				
Business/Institutions within 1/2 Block (1: yes; 0: no)	96,147			29,002 (30.16%)
Factories/other Industry within 1/2 Block (1: yes; 0: no)	96,071			4,360 (4.54%)
Public Services				
Community Services Provided (1: yes; 0: no)	98,329			18,850 (19.17%)
Trash/Junk in Streets/Properties in ½ Block (1: major accumulation; 2: minor accumulation; 3: other)	95,997			2,288 (2.38%)
Neighborhood Housing				
Abandoned/Vandalized Buildings within 1/2 Block (1: yes; 0: no)	92,785			4,945 (5.33%)
Unit about Same Age as nearby Units (1: older; 2: same; 3: newer; 4: other)	92,195			11,110 (12.05%)
Apartment Buildings within 1/2 Block (1: yes; 0: no)	96,075			26,627 (27.71%)
Single-Family Town/Row Houses in 1/2 Block (1: yes; 0: no)	95,684			17,529 (18.32%)
Single Family Homes within 1/2 Block (1: yes; 0: no)	96,155			85,192 (88.60%)
Unit Shares Plumbing Facilities (1: yes; 0: no)	98,262			826 (0.84%)
Household Characteristics				
Age of the Householder	98,329	47.25	15.65	
Nativity Status (1: native-born; 0: foreign-born)	98,329			79,856 (81.21%)
Naturalization Status (1: citizen; 0: non-citizen)	98,329			88,926 (90.44%)
Educational Attainment: High-School (1: yes; 0: no)	98,329			15,470 (15.73%)
Educational Attainment: Graduate School (1:yes;0: no)	98,329			10,203 (10.38%)
Educational Attainment: College Degree (1:yes;0: no)	98,329			46,029 (46.81%)
Marital Status of Householder (1: married; 0: not married)	98,329			63,925 (65.01%)
Gender of Householder (1: male; 0: female)	98,329			56,473 (57.43%)
Race of Householder (1: White; 0: non-White)	98,329			80,498 (81.87%)
Race of Householder (1: Black; 0: non-Black)	98,329			11,441 (11.64%)
Race of Householder (1: Asian; 0: non-Asian)	98,329			3,999 (4.07%)
Race of Householder (1: American Indian; 0: non-American Indian)	98,329			886 (0.90%)
Race of Householder (1: Pacific Islander; 0: non-Pacific Islander)	98,329			295 (0.30%)
Race of Householder (1: Mixed; 0: other)	98,329			1,050 (1.07%)
Householder with Spanish Origin (1: yes; 0: no)	98,329			14,835 (15.09%)
Homeownership Status (1: owner; 0: renter)	96,674			69,654 (72.05%)
Countries of Origin: Asia (1: yes; 0:no)	98,329			3,428 (3.49%)
Countries of Origin: Middle East (1: yes; 0: no)	98,329			717 (0.73%)
Countries of Origin: Canada (1: yes; 0: no)	98,329			320 (0.33%)
Countries of Origin: Africa (1: yes; 0: no)	98,329			496 (0.50%)
Countries of Origin: Australia & New Zealand(1: yes; 0: no)	98,329			42 (0.04%)
Countries of Origin: Latin America (1: yes; 0: no)	98,329			9,284 (9.44%)
Countries of Origin: Europe (1: yes; 0: no)	98,329			2,215 (2.25%)

Table 1 indicates that most residents are satisfied with their neighborhoods, but only about 54% are satisfied with public transportation. About 39% of residents are located in neighborhoods without community recreational facilities and a small portion live in neighborhoods with problems. Most survey respondents answer that they live close to single-family houses.

There are several data limitations that future research can correct. The first is that although the AHS provides abundant information about housing and related characteristics, it is not the best dataset to represent residential structure and characteristics. In addition to this, neighborhood amenities and satisfaction questions in the AHS do not measure all the important attributes and characteristics of satisfaction with neighborhoods. Furthermore, neighborhood satisfaction is also determined by housing satisfaction, but the AHS housing satisfaction questions do not have an overall measure of how satisfied residents are with their housing units. This hinders the specification of the regression models as they suffer from omitted variable issues. Revealing the relationships between residents, neighborhood amenities, satisfaction and livability perceptions, rather than predicting livability perceptions is the focus of the paper. Therefore these issues might not be highly relevant. Lastly, a significant amount of survey respondents did not identify their nativity status and countries of origin in the AHS. This might jeopardize the randomness of valid observations when using countries of origin in the regression models. Better data will help to improve the analysis in the future. In addition to making changes in the AHS more specific datasets focusing on housing and neighborhoods should be constructed about foreign-born residents and immigrants.

The analysis is divided into three sections: descriptive analysis, bivariate analysis, and multivariate analysis. The descriptive analysis section explores the data and summarizes the basic characteristics of the variables; particular attention is given to residential characteristics. In the bivariate analysis section neighborhood amenities and itemized satisfaction variables are summarized and compared based on nativity status. Finally, residential characteristics, neighborhood amenities, and itemized neighborhood satisfaction are incorporated into an OLS regression model. The dependent variable is perceived neighborhood livability. The independent variables are sets of variables in neighborhood satisfaction, infrastructure and physical attributes, safety amenities, business accessibility, public services, neighborhood housing, and household characteristics. If the regression model

indicates there is a significant difference of perceived neighborhood livability among native and foreign-born residents, separate regression models will be used to explore how the difference is determined among these two groups by nativity status. If the regression model does not show significant differences no further action will be taken.

Results

Difference in neighborhood amenities

Table 2 indicates that there are some differences in neighborhood amenities among different groups of residents based on nativity. In general, native-born residents live in neighborhoods with more favorable amenities than foreign-born residents. Neighborhoods of foreign-born residents tend to be close to businesses, factories, industries, neighborhood public elementary schools, and apartment buildings. A Chi-square test indicates that most of the variables are significant at 0.01 or 0.001 levels between native-born and foreign-born residents[5].

Infrastructure and physical attributes of a neighborhood can significantly predict neighborhood quality (Shaw, 1994; Lansing et al., 1964, 1970; Yang, 2008), and these attributes are some of the most important factors in determining homebuyers' location decisions. Native-born residents tend to live in neighborhoods with more favorable amenities such as community recreational facilities, open green spaces, and bodies of water. About 40% of native-born residents are in neighborhoods with community recreational facilities, compared to 33% of foreign-born non-citizen residents. More foreign-born residents are closer to railroads/airport/4-lane highway within ½ block. Foreign-born non-citizens tend to live in neighborhoods with the least amiable infrastructure and physical amenities. They also tend to complain more about roads needing major repairs[6].

Gates and entry systems to neighborhoods are often perceived to add safety to the neighborhoods[7]. Compared to native-born residents, foreign-born residents, especially non-citizen, have a higher percentage of living in gated

5 The Chi-square test result might be biased due to large sample size.
6 However, the five measures in the survey did not include all the physical attributes of various neighborhoods and neglected some important features such as sidewalks, landscape coverage, setbacks, building heights, and the overall maintenance of neighborhood facilities and buildings.
7 Other safety measures, such as the frequency of police patrols in the area, are not captured in the survey.

communities or those with required entry systems. This finding is consistent with the findings from Sanchez et al. (2005). This might be because many foreign-born residents are renters and they seek more perceived neighborhood safety, especially given the psychological stress of living in an unfamiliar environment compared to their home countries.

Table 2. Comparison of neighborhood amenities between native-born and foreign-born residents

Amenities	Native-Born (%)	Foreign-Born (%)
Infrastructure and Physical Attributes		
Community recreational facilities available (yes)***	39.9	36.2
Open spaces within ½ block of unit (yes)***	42.4	27.5
Bodies of water within ½ block of unit (yes)***	17.6	10.3
Roads within ½ block need repairs (major repair work)*	5.6	5.2
Railroad/airport/4-lane highway within ½ block (yes)***	14.9	17.2
Safety		
Entry system required to access community (yes)***	3.9	7.6
Walls/fences surrounding community (yes)***	7.5	14.9
Demographics		
Majority of neighbors 55+ (yes)***	7.3	3.5
Businesses Accessibility		
Neighborhood stores within 1 mile (yes)***	94.1	96
Business/institutions within ½ block (yes)***	27.3	38.9
Factories/other industry within ½ block (yes)***	4.1	5.9
Public Services		
Neighborhood public elementary school within 1 mile*** (yes)***	19.2	34.3
Trash/junk in streets/properties in ½ block (major accumulation)**	2.4	2.1
Community services provided (yes)***	19.6	17.2
Neighborhood Housing		
Abandoned/vandalized buildings within ½ block (yes)***	5.2	4.1
Unit about same age as nearby units (same)***	67.3	74.7
Apartment buildings within ½ block of unit (yes)***	23.5	42.8
Single-family town/row houses in ½ block (yes)***	16.3	24.4
Mobile homes within ½ block of unit (yes)***	12.1	5.6
Unit shares plumbing facilities (yes)***	0.7	1.4

**** p < 0.001; ** p < 0.01; * p < 0.1*

In general, over 90% of both native-born and foreign-born residents have access

to neighborhood stores within a mile of their homes, but more foreign-born non-citizen residents tend to live close to various businesses and factories. The reasons that foreign-born residents tend to be closer to neighborhood stores, businesses, factories, or other institutions and factories might be due to the convenience or cultural traditions of living close to commercial quarters. Meanwhile rental communities are often close to commercial and industrial activities and potentially have a less favorable location in terms of land use.

Public services can be measured by public schools, roads, transportation, provision of utilities, waste pick-up and disposal, and others. About 19% native-born residents responded to having neighborhood public elementary schools within 1 mile, but about 40% foreign-born, non-citizen residents live close to public elementary schools. This might indicate that foreign-born residents, in general, value convenience and accessibility more than native-born residents.

The difference in housing attributes manifests the significant difference in the quality of neighborhoods and the property values associated with these housing units. Higher percentages of vacant housing, rental housing units, and mobile homes usually signal less desirable neighborhoods, although it is often a case-by-case phenomenon. Generally speaking, among the six elements measured by the American Housing Survey regarding neighborhood housing, a larger percentage of foreign-born residents reported living close to apartment buildings and/or single-family town/row houses, particularly for those foreign-born, non-citizen residents. On the other hand, a larger portion of native-born residents live close to mobile homes, especially native-born whites who tend to live closer to mobile homes and bodies of water than any other groups.

Therefore, in general, there are some differences in residential preferences and neighborhood amenities between native-born and foreign-born residents. Native-born residents tend to live closer to bodies of water and green open space, in neighborhoods where there are recreational facilities, residents are older, community services are provided, and there are more single-family detached houses. Foreign-born residents, particularly foreign-born, non-citizen residents, tend to be closer to highways, airports, railroads, and in gated (or entry-system enabled) neighborhoods where there is easy accessibility to businesses, factories, or institutions, public elementary schools, and more rental or multiple family housing units. Judging from these facts we cannot conclude that foreign-born residents tend to be in neighborhoods with low levels of livability because the trade-off between convenience and neighborhood amenities dominates the locational decision-making process of residents. However, proximity to bodies of water,

open space, and living in neighborhoods with community services and recreational facilities are added benefits to quality of life.

Neighborhood satisfaction and perceived livability

In general, most residents are very satisfied with the neighborhoods they live in, although there are slight differences between native-born and foreign-born residents. A higher percentage of native-born residents tend to complain about people and things in neighborhoods as bothersome (Table 3). The most notable difference is that about 43.1% native-born think public elementary school so bad they want to move, compared to 35% foreign-born residents. This could indicate that foreign-born residents are more satisfied with schools, or because they might not have an option to move easily they are less likely to respond yes to this question. All the residents, regardless of nativity status, are highly satisfied with police protection, public elementary schools, and shopping. Native-born residents are less satisfied with public transportation than foreign-born residents. Only about 48.6% native-born residents are satisfied, while 71% foreign-born residents are satisfied. This might indicate foreign-born residents use public transportation more than native-born, thus more would answer yes; or neighborhoods where most native-born residents live, such as suburban neighborhoods, do not have satisfactory access to public transit.

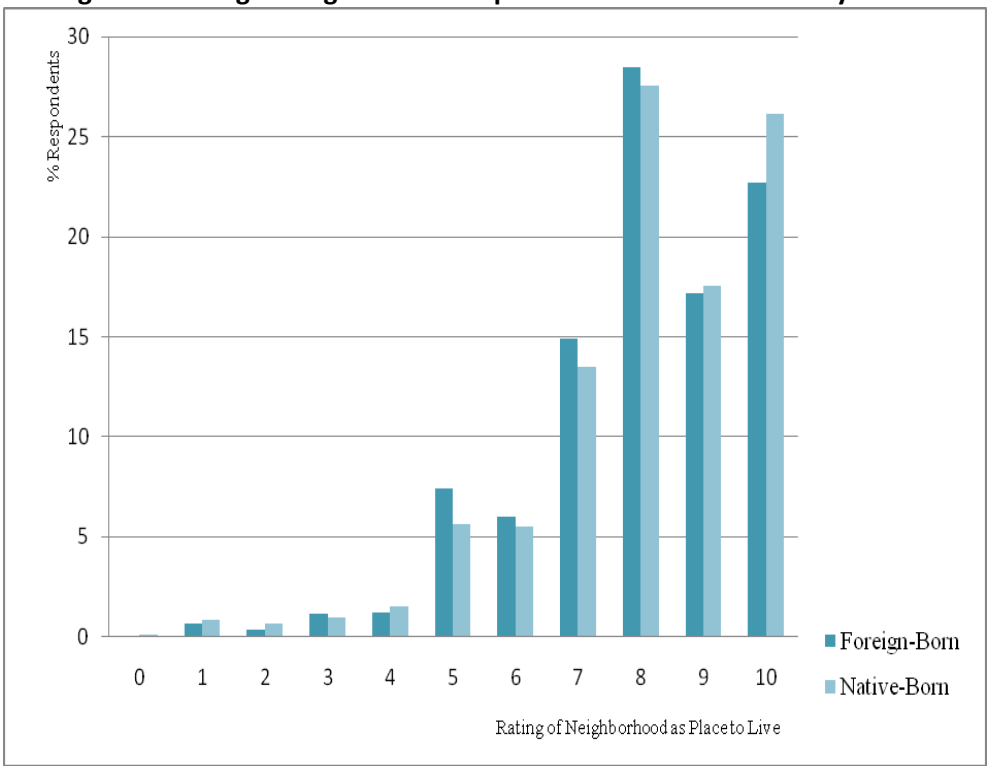
Table 3. Comparison of neighborhood satisfaction between native-born and foreign-born residents

Neighborhood Perception or Satisfaction	Native-Born (%)	Foreign-Born (%)
Things Bothersome		
People in neighborhood are bothersome (yes)***	4.8	4.1
Undesirable neighborhood/property bothersome (yes)***	0.8	0.2
Poor city/county services are bothersome (yes)	0.6	0.6
Litter in neighborhood bothersome (yes)	1.4	1.4
Noise in neighborhood bothersome (yes)***	1.5	2.1
Public elementary school so bad you want to move (yes)***	43.1	35.0
Other problems bothersome (yes)***	9.3	7.8
Satisfaction		
Neighborhood public transportation satisfactory (yes)***	48.6	71.0
Neighborhood police protection satisfactory (yes)**	90.0	89.3
Neighborhood public elementary school satisfactory (yes)***	91.0	94.7
Neighborhood shopping satisfactory (yes)***	97.5	98.0

**** p < 0.001; ** p < 0.01; * p < 0.1*

The item "ratings of neighborhood as place to live" has a Likert scale of 1 to 10, where 10 is the highest rating. The average rating for all the residents is 8.05, which means most survey respondents think their neighborhoods are highly livable. The majority of the residents rated their neighborhoods as moderately or highly livable (scales 5-10); while a larger portion of foreign-born residents rated the livability of their neighborhoods between 5-8 (see Figure 1). A smaller portion of foreign-born residents rated the livability of their neighborhoods between 1-2 or between 9-10. This indicates that most foreign-born residents are moderately satisfied with their neighborhoods, compared to the dichotomy of the livability perception of native-born residents which have a larger portion rating the neighborhoods either as the least livable or the most livable. A Chi-square test indicates that native-born and foreign-born residents are significantly different in terms of the rating of neighborhoods as livable[8].

Figure 1. Rating of neighborhood as place to live based on nativity status



8 Again, due to large sample size the Chi-square test result might be biased.

Residential characteristics, neighborhood amenities, satisfaction, and perceived livability

The previous sections analyzed the overall difference between native-born and foreign-born residents in residential characteristics, neighborhood amenities, satisfaction, and perceived livability without controlling for the effects of multiple variables. An OLS regression model is used to explore how residential characteristics, neighborhood amenities and satisfaction are related to the overall perception of neighborhood livability (see Table 4). Thus the dependent variable is Rating of Neighborhood as Place to Live (with a Likert scale of 1-10). There are 80,229 valid observations for the regression model and the R-squared is 0.19. The low R-squared value indicates that neighborhood amenities, satisfaction, and residential characteristics only account for a small portion of the variance explaining the overall ratings of neighborhoods as livable. Omitted variables could be from housing characteristics and satisfaction, geographical characteristics, other neighborhood amenities, and other itemized neighborhood satisfaction.

In the combined model we find that there is no significant difference in perceived neighborhood livability between foreign-born and native-born residents (see Table 4). With the exception that the satisfaction with public transportation is negatively related to perceived neighborhood livability, all of the other three neighborhood satisfaction items positively contribute to perceived neighborhood livability. This might imply that in most of the U.S. metropolitan areas public transportation mainly serves low-moderate income riders and neighborhoods. Although the provision of public transportation might not be directly related to perceived neighborhood livability, neighborhoods with mature public transit systems might not have satisfactory housing and neighborhood amenities.

Favorable amenities, such as proximity to open space and bodies of water, prove to be positively related to perceived neighborhood livability. Less favorable neighborhood conditions, such as having parking lots within a ½ block, and business, institutions and/or factories within a ½ block negatively relate to perceived neighborhood livability. Although we are not sure which businesses, institutions or factories are within the vicinity of the survey respondents the results indicate the importance of having zoning and land use regulations. Giving that neighborhood shopping satisfaction positively relates to neighborhood livability we can speculate residents favor having certain businesses but not others. Safety concerns, reflected by satisfaction with police protection and having walls/fences surrounding communities, positively contribute to perceived livability.

Table 4. Regression models of factors related to perceived neighborhood livability

Variable	Parameter Estimate	t-value	Pr > |t|
Dependent Variable: Perceived Neighborhood Livability (1-10)			
Intercept	2.0167	18.15	<.0001
Neighborhood Satisfaction			
Neighborhood Public Transportation Satisfactory (1: satisfied; 0: unsatisfied)	-0.1756	-14.25	<.0001
Neighborhood Police Protection Satisfactory (1: satisfied; 0: unsatisfied)	1.0803	47.15	<.0001
Neighborhood Shopping Satisfactory (1: satisfied; 0: unsatisfied)	0.3217	8.48	<.0001
Infrastructure and Physical Attributes			
Community Recreational Facilities Available (1: yes; 0: no)	0.1223	9.40	<.0001
Open Green Spaces within 1/2 Block (1: yes; 0: no)	0.2229	18.80	<.0001
Bodies of Water within 1/2 Block (1: yes; 0: no)	0.1064	6.78	<.0001
Roads within 1/2 Block Need Repairs (1: major repair work; 2: minor repair work; 3: other)	0.2419	24.89	<.0001
Parking Lots within 1/2 Block (1: yes; 0: no)	-0.1318	-8.52	<.0001
Safety Amenities			
Walls/fences surrounding Community (1: yes; 0: no)	0.0959	4.71	<.0001
Business Accessibility			
Business/Institutions within 1/2 Block (1: yes; 0: no)	-0.0672	-4.59	<.0001
Factories/other Industry within 1/2 Block (1: yes; 0: no)	-0.1023	-3.69	0.0002
Public Services			
Community Services Provided (1: yes; 0: no)	0.0212	1.34	0.1798
Trash/Junk in Streets/Properties in ½ Block (1: major accumulation; 2: minor accumulation; 3: other)	0.8548	53.51	<.0001
Neighborhood Housing			
Abandoned/Vandalized Buildings within 1/2 Block (1: yes; 0: no)	-0.8026	-29.56	<.0001
Unit about Same Age as nearby Units (1: older; 2: same; 3: newer; 4: other)	0.0725	8.19	<.0001
Apartment Buildings within 1/2 Block (1: yes; 0: no)	-0.1847	-11.26	<.0001
Single-Family Town/Row Houses in 1/2 Block (1: yes; 0: no)	-0.0159	-1.03	0.3020
Single Family Homes within 1/2 Block (1: yes; 0: no)	0.1027	4.62	<.0001
Household Characteristics			
Age of the Householder	0.0114	29.12	<.0001
Nativity Status (1: native-born; 0: foreign-born)	0.0283	0.69	0.4877
Naturalization Status (1: citizen; 0: non-citizen)			
White (1: yes; 0: no)	-0.0264	-0.54	0.5882
Black (1: yes; 0: no)	-0.0429	-1.68	0.0930
Asian (1: yes; 0: no)	-0.1624	-2.44	0.0149
Mixed Race (1: yes; 0: no)	-0.0887	-1.22	0.2219
Educational Attainment: College Degree (1: yes; 0: no)	-0.0489	-4.20	<.0001
Household Income (log)	0.0750	11.61	<.0001
Marital Status of Householder (1: married; 0: not married)	0.0539	4.02	<.0001
Homeownership Status (1: owner; 0: renter)	0.1159	7.13	<.0001
Countires of Origin: Asia (1: Yes; 0: No)	0.0330	0.52	0.5997
Countires of Origin: Europe (1: Yes; 0: No)	0.1812	3.30	0.001
Countries of Origin: Latin America (1: yes; 0: no)	0.2316	5.26	<.0001
Countries of Origin: Middle East (1: yes; 0: no)	0.3084	3.86	0.0001
Countries of Origin: Canada (1: yes; 0: no)	-0.1168	-1.09	0.2748
Countries of Origin: Africa (1: yes; 0: no)	-0.0845	-0.93	0.3518
Countries of Origin: Australia & New Zealand(1: yes; 0: no)	-0.2401	-0.90	0.3692
R-Square	0.19		
No. of Valid Observations	80,229		

Single-family neighborhoods, neighborhoods with fewer abandoned/vandalized properties, and neighborhoods with newer housing stock tend to be viewed as more livable compared to multi-family neighborhoods and/or older neighborhoods with more abandoned/vandalized properties. This indicates the importance of physical features (open space, water, and abandoned/vandalized properties), public service (roads and trash/junk), cleanliness (trash/junk), and compatibility and density of land uses (parking lots, business/institutions, and single-family vs. multi-family neighborhoods) in explaining residents' perception of livability.

In probing how residential characteristics relate to the levels of perceived neighborhood livability older, married, higher income individuals and/or homeowners tend to rate their neighborhoods as more livable. Racial minorities tend to rate their neighborhoods less livable, while foreign-born residents from certain countries (such as Europe, Latin America, and Middle East Countries) tend to rate their neighborhoods more livable.

Conclusions and discussions

In conclusion, the research finds that native-born and foreign-born residents have some differences in terms of residential characteristics, housing tenure status, neighborhood amenities, neighborhood satisfaction, and perceived livability. Native-born residents have higher homeownership rates than foreign-born residents. The distribution of resident income is heterogeneous among different groups. Citizen residents, regardless of whether they are native-born or foreign-born, have higher income levels and homeownership rates than non-citizen groups. When looking at the age of resident occupants, citizen residents, whether native-born or foreign-born, tend to be older than non-citizen residents.

In terms of neighborhood amenities, native-born residents in general tend to live in neighborhoods with desirable amenities such as community recreational facilities available, proximity to bodies of water, and proximity to open spaces. Foreign-born residents tend to live in neighborhoods with less favorable amenities, such as proximity to highways, roads needing major repairs, proximity to businesses, factories, other industries, and multiple-family housing units. However, foreign-born residents tend to live closer to neighborhood stores and elementary schools, and public transportation is very satisfactory. Native-born residents tend to rate their neighborhoods either as highly livable (8-10) or not highly livable (1-4). Native-born resident occupants are less satisfied

with their neighborhoods and they tend to complain more about things and people as bothersome in the neighborhood. Native-born residents complain that people, litter, noise, public elementary schools, and other problems are bothersome, and they are less satisfied with public transportation, public elementary schools, and neighborhood shopping. On the other hand, foreign-born residents, especially non-citizen residents, tend to complain less and are more satisfied with most of the itemized neighborhood elements. Both groups reported similar satisfaction levels with police protection. However, the regression analysis indicates there is no significant difference in perceived neighborhood livability among foreign-born and native-born residents, controlling for residential characteristics. This is consistent with what Friedman and Rosenbaum (2004) have found that socioeconomic status of the residents, instead of nativity status, determines the housing outcomes of immigrants.

Hopefully these findings will help us understand more about the locational attainment, neighborhood perceptions, and satisfaction of residents based on nativity status. These results might have some public policy implications when providing public services and desirable amenities to neighborhoods. Differences in quality of life expectations and focuses might explain some of the differences between native-born residents and foreign-born residents, especially if the foreign-born residents are originally from countries with lower standards of living. Better housing, neighborhoods, and the overall built environments in the U.S. make them more satisfied, even though the quality of their housing and neighborhoods might still be significantly lower compared to native-born residents. Although we are not sure how residents balance convenience and amenities, satisfaction levels are greatly determined by personal heterogeneous experiences and socioeconomic characteristics. The central issue should focus on improving quality of life for both native-born and foreign-born residents, providing both convenience and favorable amenities without sacrifice of housing affordability.

It is challenging to create neighborhoods with more favorable amenities and convenient services, especially in those with concentrated renters and immigrants, or suburban neighborhoods where land uses are highly homogeneous and segregated. Since more foreign-born residents might concentrate in urban areas where favorable amenities such as open space and bodies of water are not available, other favorable amenities such as community services and recreational facilities should be provided. Another major issue is about socioeconomic status, the quality of housing, the amenities, and services which ultimately determine residential satisfaction and neighborhood livability. The ultimate goal of improving quality of life of residents, no matter foreign-

born or native-born, is to improve their socioeconomic statuses such as income and education, which in turn determines their residential preferences and neighborhood satisfaction. The research results can be also combined with various programs to advance quality of life indicators for all residents, particularly private programs targeting to help immigrant residents who oftentimes are not eligible to receive public assistance.

Neighborhoods are important determinants of residents' locational preferences; accordingly, how different residents react to different neighborhood amenities needs to be studied in more depth. As mentioned previously this paper provides the first attempt to understand residential satisfaction of immigrants and the differences in neighborhood amenities, satisfaction and perceived livability between native-born and foreign-born residents. However, it suffers from a few data limitations. In the future the neighborhood elements in the American Housing Survey need to be more comprehensive and reflect on the most current socio-economic conditions. Satisfaction with housing should be added to the survey as an individual variable. Moreover, first-hand data using restructured survey instruments might be helpful in providing more detailed synopsis about if and why foreign-born and native-born residents differ in neighborhood amenities, satisfaction, and perception. The targeted survey and research should focus more on immigrants based on countries of origin and how previous personal experiences influence their current perceptions of satisfaction and livability. Future research should also try to obtain larger sample sizes of both foreign-born and native-born residents controlling for geographical differences. Objective neighborhood amenities where foreign-born residents live should be incorporated in the research. Thus future research should attempt to correct for the data limitations and focus on more detailed idiographic analysis of immigrants and their residential satisfaction and perceptions of neighborhoods.

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