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The Anatomy of Rent Burdens: Immigration, Growth and Rental Housing

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### Authors

Greulich, Erica  
Quigley, John M.  
Raphael, Steven

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ERICA GREULICH

*University of California, Berkeley*

JOHN M. QUIGLEY

*University of California, Berkeley*

STEVEN RAPHAEL

*University of California, Berkeley*

## *The Anatomy of Rent Burdens: Immigration, Growth, and Rental Housing*

During the past three decades, shelter payments for renter households have become more burdensome, especially for poor households and households residing in large urban areas. Between 1970 and 2000, the median rent burden increased from 20 to 25 percent of income. For the poorest fifth of households, the proportion of income devoted to housing increased from 0.51 to 0.55. Concurrently, the proportion of low-income households devoting greater than 30 percent of their income to housing expenditures increased from 67 percent to 79 percent.<sup>1</sup> There have been no comparable increases in housing expenditures among high-income renters or high-income homeowners.

During this period, the foreign-born population residing in the United States has experienced sustained growth and has contributed disproportionately to overall population growth. In 1970 the foreign born accounted for 4.7 percent of the resident population of the United States. As of 2000, this figure had increased to 10.4 percent. In these three decades, the resident immigrant population increased by 16.2 million persons, accounting for roughly one-quarter of overall net population growth in the United States.<sup>2</sup>

Several factors, in combination, suggest that international migration may affect the housing outcomes of many households headed by the native born. Within the United States, the foreign born are disproportion-

1. Quigley and Raphael (2004).

2. U.S. Census Bureau (2001).

ately concentrated in six states (in order of importance, California, New York, Florida, Texas, New Jersey, and Illinois) and a handful of metropolitan areas. The concentration of immigrants in selected metropolitan areas coupled with very low housing supply elasticities implies that a large influx of immigrants may result in substantial increases in housing prices and rents in those areas.

Moreover, recent immigrants to the United States are, on average, considerably less educated than natives, have lower incomes, and are more likely to reside in rental housing.<sup>3</sup> Immigrant households are thus likely to compete for housing with low-income natives—the very group that has experienced increasing rent burdens in recent decades.

The effect of immigration on housing prices depends on two factors: the extent to which the U.S. destination choices of international immigrants are exogenous to the current economic conditions at those destinations; and the speed at which population flows among U.S. cities and housing supplies in those cities adjust to variations in exogenous immigration. There is a wealth of literature suggesting that the destinations chosen by international immigrants are heavily dependent on noneconomic factors—the prior decisions of extended family members and the prior existence of enclaves of immigrants from the same country or region of origin, speaking the same language, with the same cultural tradition. Documentation of these locational proclivities among cities and regions (but also across neighborhoods) exists for nineteenth-century immigration to the United States and for twentieth-century migration.<sup>4</sup> Current U.S. immigration policy, with its explicit preference for family reunification, suggests that the choice of destination for new immigrants is less responsive to economic conditions at the destination than would be expected on the basis of a utility-maximizing calculus explicitly taking housing costs into account.<sup>5</sup>

There is convincing evidence that large-scale international immigration to an exogenously determined destination *does* affect housing prices in the short run. Independent studies by Susin and Saiz analyzed the effects of the Mariel Boatlift, in which 125,000 Cubans migrated to

3. Borjas (1999).

4. For nineteenth-century immigration see, for example, Quigley (1972), and for twentieth-century migration see Duncan and Lieberson (1959).

5. Roback (1982).

Miami over a five-month period in 1980.<sup>6</sup> Both authors found a consequent rise in rental housing prices in Miami, especially for lower-quality housing in minority neighborhoods. These price changes were observed over a relatively short time interval, 1979 to 1983.

Over a longer period, it is less clear that exogenous levels of immigration affect price levels. Indeed, in a model of systems of cities, the effect of an exogenous shock of international migration to housing prices in a given city must be vanishingly small.<sup>7</sup> In the absence of transaction costs, the effects of an exogenous increase in immigration to a single city will be partially offset by outmigration of both the native born and earlier cohorts of immigrants. The effects of immigration will also be partially offset by increases in housing supplies. In equilibrium, the utilities of residents with the same endowments must equalize across all cities. Thus an exogenous, immigration-induced population increase to one city will eventually decrease the utility of each resident (in all cities) by a very small amount.<sup>8</sup>

Research on the determinants of the price of low-quality housing has focused largely on the effects of zoning and land use regulation, increasing income inequality, and the profitability of constructing low-quality housing.<sup>9</sup> With the exception of the work by Susin and Saez, however, there has been little research on immigrant housing consumption patterns and the link between international immigration and the price of urban housing.<sup>10</sup> In this paper, we investigate the effects of the growth in the immigrant population during the past two decades on the housing consumption opportunities of native-born renter households.

We begin with a brief description of the evolution of rent burdens across the largest U. S. metropolitan areas (MSAs) during the past two decades. From the Public Use Microdata Sample (PUMS) of the census, we estimate the distribution of rent burdens for each metropolitan area in

6. Susin (2001); Saiz (2003a).

7. See, for example, Fujita, Krugman, and Mori (1999).

8. If housing supply is not perfectly elastic, or if the increase in aggregate population increases aggregate transport costs more than proportionately, the utilities of residents with the same endowments will decline. But unless immigration is large relative to the number of households in the system, this reduction in individual well-being will be quite small. See Abdel-Rahman and Anas (forthcoming) for an extensive review of these models.

9. Malpezzi and Green (1996); O'Flaherty (1996); Ohls (1975).

10. Susin (2001); Saiz (2003a, 2003b). There is, however, at least one recent analysis of immigrant homeownership propensities. See Borjas (2002).

1980, 1990, and 2000. We investigate the shapes of these distributions and their changes across MSAs and decade, separately for all renter households and for poor renter households. We also present a focused analysis of rent burdens in five metropolitan areas with large immigrant populations.

Next, we describe and analyze the housing consumption patterns of immigrants. Using a synthetic cohort framework, we assess the extent to which the housing conditions of immigrants converge to those of the native born as they spend more time in the United States. We model the empirical relationship between housing characteristics and the nativity status of the household head and use this empirical model to identify and describe those native households that are most and least likely to compete with immigrants in the housing market.

Finally, we test for a relationship between the proportion of an MSA's population that is immigrant and a host of housing outcomes for native households. We present estimates using cross-sectional analysis and an analysis of within-MSA changes. We present separate estimates for native households with high and low probabilities of competing with immigrants for housing.

In the cross section, we find that the monthly housing expenses of natives are higher in metropolitan areas with large immigrant populations. However, these marginal effects are comparable both for native households in direct competition with immigrants and for native households unlikely to compete with immigrants in the housing market, suggesting that housing in immigrant cities is more expensive for reasons that are distinct from the issue of immigration. Moreover, while average rents paid by native households increase with the proportion of immigrants in a given metropolitan area, the same is not true for rent-to-income ratios. In fact, there is no within-MSA relationship between rent burdens and the relative size of the immigration population. Thus, based on housing expenditures, there is little evidence supporting the contention that the level of immigration adversely affects the housing outcomes of the native-born population.

We do, however, find that native households in metropolitan areas with high proportions of immigrants consume less housing and are more likely to reside in crowded conditions compared with native-born households in metropolitan areas with relatively small immigrant populations. This result holds in the analysis of cross-sectional variation as well as the

analysis of changes within MSAs. In cross-section regressions, the relationship between the proportion immigrant and these measures of housing consumption is considerably stronger for those native-born households who are more likely to be in competition with immigrants in the housing market. This relative pattern, however, does not hold when we estimate the model using decade-level changes in the dependent and explanatory variables.

### **Rent Burdens in U.S. Metropolitan Areas**

We extracted each household's income and its monthly rent from the Public Use Microdata Samples (PUMS) of the 1980, 1990, and 2000 censuses, thus permitting us to estimate the complete distribution of rent burdens (that is, rent-to-income levels) for the 106 largest metropolitan areas (MSAs) during two decades.<sup>11</sup>

The distribution of the median rents across these MSAs, reported in figure A-1 in the appendix to this paper, has changed substantially during this time period. Median rent-to-income ratios increased between 1980 and 1990. In fact, three-quarters of these MSAs experienced increases in median rent burdens during the 1980s.<sup>12</sup> Although the mode of this distribution increased further during the 1990s, median rent burdens declined in the 1990s in about 60 percent of these MSAs.

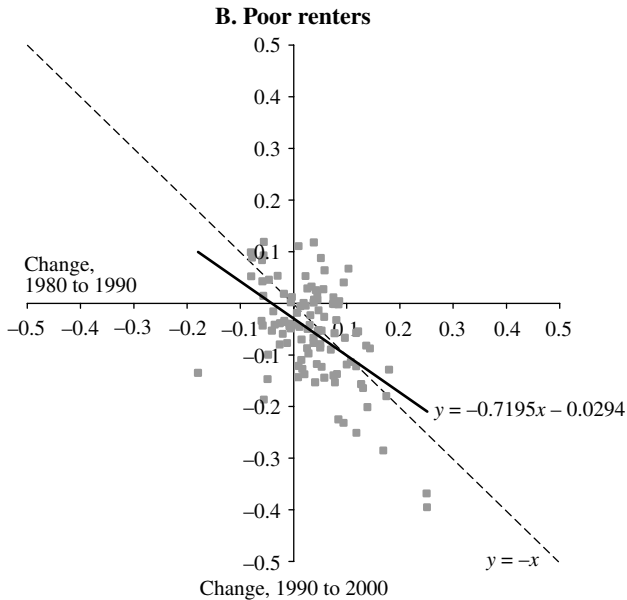
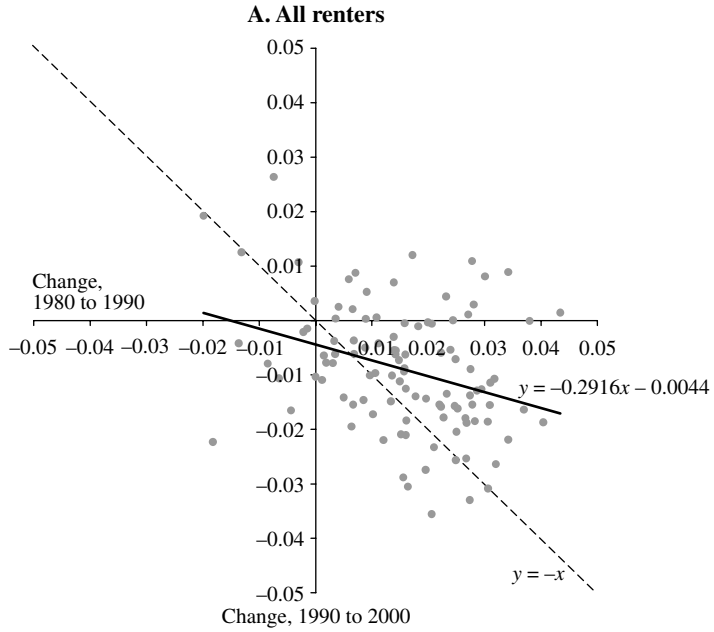
The pattern of changes in median rent burdens for poor households during this period is similar. Although the distribution of median rent burdens for the poor is centered on 0.60 as opposed to 0.25 for all renters, this distribution shifted slightly to the right during the 1980s and to the left during the 1990s.

Figure 1 summarizes changes in the median rent burdens in the largest U.S. metropolitan areas during the past two decades. The figure plots the 1980–90 changes in median rent burden versus the 1990–2000 changes for each MSA. Figure 1, part A, reports the changes for all renters, and

11. This analysis is based on the 5 percent PUMS samples from the 1980 and 1990 censuses and the one-percent PUMS sample from the 2000 Census. The 2000 sample necessarily restricts our analysis to 106 MSAs, but these account for 56 percent of the native-born population and 84 percent of the immigrant population in 2000.

12. The distribution of rent burdens for these MSAs in 1990 stochastically dominates the distribution in 1980.

Figure 1. Changes in Median Rent Burdens, 1980–90, versus Changes to Median Rent Burdens, 1990–2000



Note: 106 largest metropolitan statistical areas (MSAs).

figure 1, part B, reports the changes for renters with incomes below the poverty line. As indicated in figure 1, part A, there are few MSAs where median rent burdens declined during the 1980s. But it is also clear that there were more pronounced declines in rent burdens during the 1990s in those MSAs in which there had been more pronounced increases during the 1980s. This is true for more than three-quarters of the MSAs.

This mean reversion across MSAs is even more pronounced for poor renters (figure 1, part B). Larger increases in MSA median rent burdens for poor households in the 1980s are associated with larger decreases in the 1990s.

#### *Individual Metropolitan Areas with Large Immigrant Populations*

The immigrant population in the United States is heavily concentrated in a handful of large metropolitan areas. Thus, to the extent that immigration affects the rent burdens of the native born, one would expect to observe changes in the distributions of rent-to-income ratios in metropolitan areas with large immigrant populations. We explore this question more systematically later; here we simply describe the evolution of rent burdens in five principal urban destinations for immigrants: New York City, Los Angeles, Houston, Miami, and Chicago. These MSAs collectively accounted for roughly 45 percent of the foreign-born population in the United States in 2000.

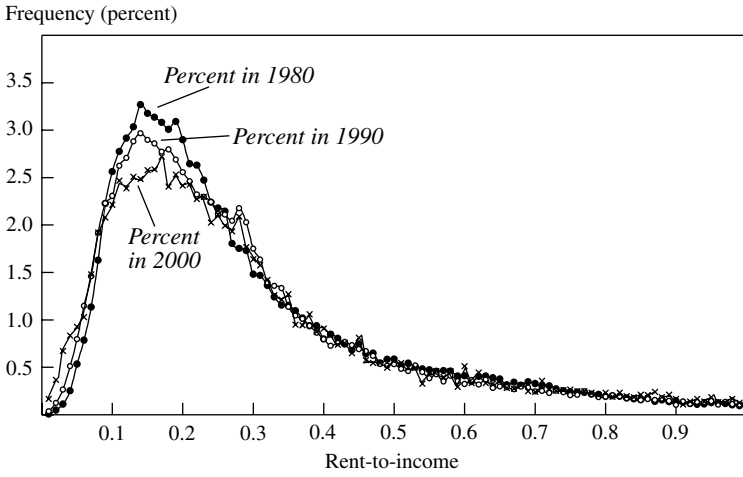
Figure 2 presents frequency distributions of rent-to-income ratios for all renters in these metropolitan areas. With the exception of the distribution for New York, the distributions of rent burdens were quite stable across decades. In New York City, the variance of the distribution of rent ratios increased in each decade since 1980. However, there is no evidence of a substantial shift. In Los Angeles, the rent burden distribution shifted to the right during the 1980s and receded slightly during the 1990s. A similar pattern is observed for Chicago. For Houston and Miami, there were no apparent changes in the distribution of rent burdens between 1980 and 2000.

These patterns also appear in the median rent-to-income ratios for these cities. The median ratio for New York increased slightly between 1980 and 1990, from 0.24 to 0.25, and then remained constant through 2000. Los Angeles experienced an increase in median rent burdens during the 1980s, from 0.26 to 0.28, and then a decrease of 0.01 during the 1990s, as did Miami (0.28, 0.30, and 0.29 for 1980, 1990, and 2000, respectively). Chicago experienced the largest increase in rent burdens

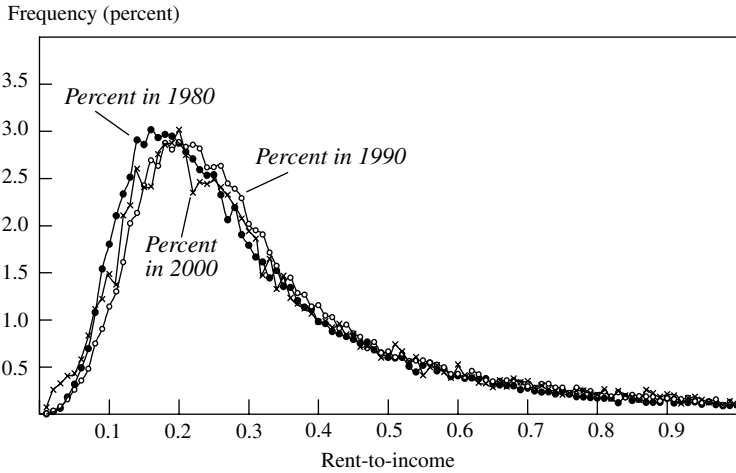


**Figure 2. Frequency Distribution of Rent Burdens for Metropolitan Areas with Large Immigrant Populations, 1980, 1990, and 2000**

**A. New York**

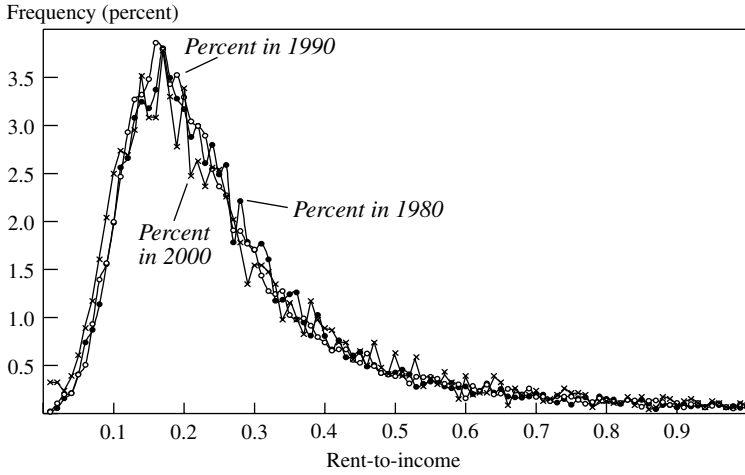


**B. Los Angeles**

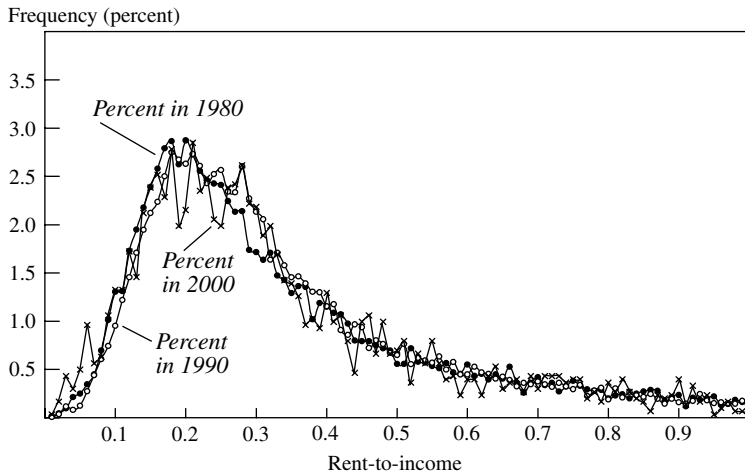


**Figure 2. Frequency Distribution of Rent Burdens for Metropolitan Areas with Large Immigrant Populations, 1980, 1990, and 2000 (continued)**

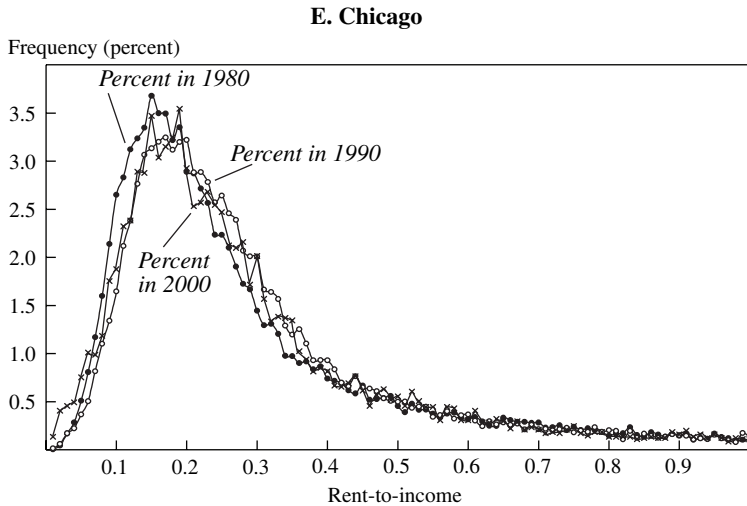
**C. Houston**



**D. Miami**



**Figure 2. Frequency Distribution of Rent Burdens for Metropolitan Areas with Large Immigrant Populations, 1980, 1990, and 2000 (continued)**



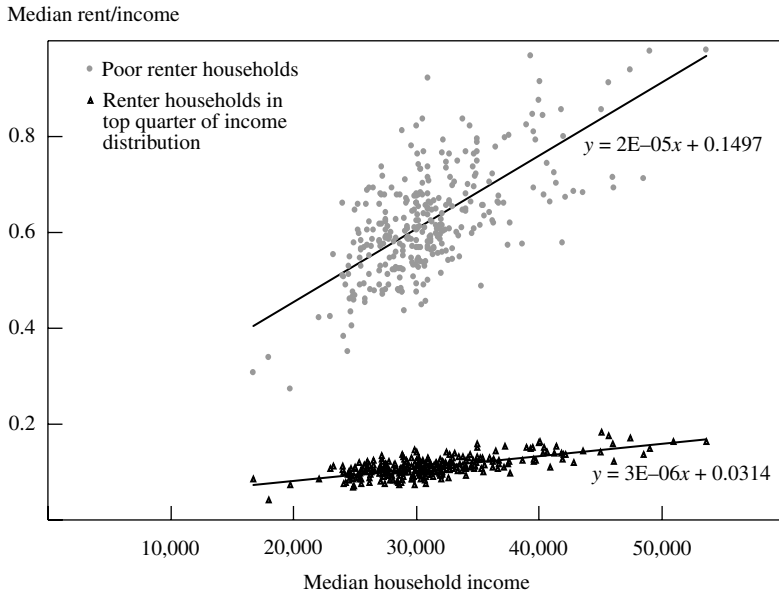
during the 1980s (from 0.22 to 0.25) before a small decline in the 1990s (to 0.24). The median rent ratio in Houston was stable during the twenty-year period. Thus, for these heavily immigrant cities, there are no notable shifts in the rent-to-income distribution during the two-decade period when their immigrant population grew substantially.

Of course, these patterns may simply be dominated by factors external to housing markets. For all metropolitan areas, the declines in the median rent burdens for the poor occurred largely during the 1990s, a period when the poverty rates declined, and the incomes of the poor increased. In an analysis of the national distribution of rent-to-income ratios, Quigley and Raphael show that income growth among the poor lowered rent burdens, holding the rental distribution constant.<sup>13</sup> Nonetheless, the patterns in figure 2 suggest that if immigration had any effect on rent burdens in these five cities, the effect was swamped by other factors.

Figures 3 through 6 suggest the importance of several other factors affecting rent burdens in the 106 largest metropolitan areas. These scatter plots represent the bivariate relationship between rent burdens and four factors affecting housing costs: median incomes, new construction,

13. Quigley and Raphael (2004).

**Figure 3. Median Rent Burdens versus Index of Regulatory Stringency (Malpezzi Index), 106 MSAs in 1980, 1990, and 2000**



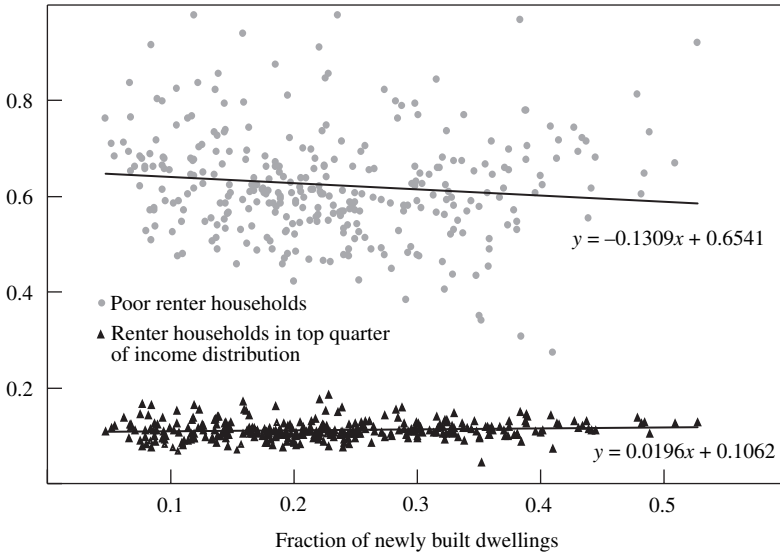
recent immigration, and the regulatory stringency of rules governing housing supply.

Figure 3, based on 106 MSAs observed in three censuses, demonstrates that rent-to-income ratios tend to be higher in high-income MSAs. This positive relationship is weak among high-income renters but quite strong for poor renters. Figure 4 assesses whether MSAs where larger proportions of the housing stock are relatively new have lower rent burdens than areas where the housing stock is older. Presumably, new construction in the housing stock reflects greater price sensitivity in housing supply. For high-income renters, there is no relationship between rent burdens and the proportion of the housing stock that is new. For poor households, there is a clearer relationship—a newer housing stock is associated with lower rent burdens for the poor.

Figure 5 plots the bivariate relationship between rent ratios and the fraction of households headed by recent immigrants. Again, there is a weak positive relationship for high-income renters but a much stronger positive relationship for poor renters. Finally, figure 6 relates median rent

**Figure 4. Median Rent Burdens versus Fraction of Newly Built Dwellings, 106 MSAs in 1980, 1990, and 2000<sup>a</sup>**

Median rent/income



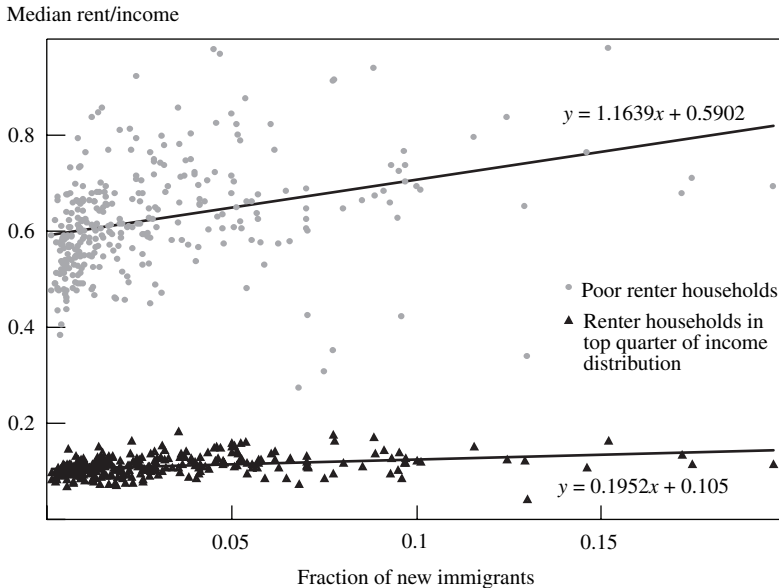
a. Fraction of dwellings built in past decade.

ratios to the Malpezzi measure of regulatory stringency in building and residential construction.<sup>14</sup> Metropolitan areas where regulation inhibits the creation of new housing are those where the rent burdens of the poor are highest.

The figures suggest that all four factors may have significant impacts on local rent burdens, especially those of the poor. The relationship between the proportion of immigrant households and rent burdens is particularly strong for poor renter households. Although figure 2 shows only small changes in rent burdens in the five largest immigrant-receiving cities during this period of large-scale immigration, comparisons of immigrant cities versus nonimmigrant cities reveal a larger differential. Thus we now turn to a more thorough analysis of immigrant housing consumption patterns and their impacts on housing outcomes for native-born households.

14. This measure, see Malpezzi (1996), is only available for the decade of the 1990s. The scatter diagram in figure 6 thus has only 106 points, rather than 318. A higher index implies more stringent regulations.

**Figure 5. Median Rent Burdens versus Fraction of New Immigrants, 106 MSAs in 1980, 1990, and 2000<sup>a</sup>**



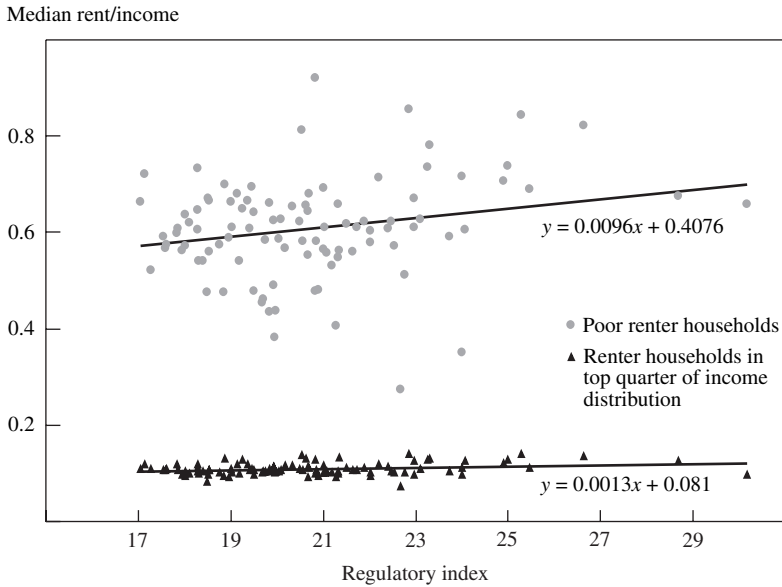
a. Fraction of households headed by immigrant arriving in past decade.

### **Immigrant Housing Patterns and their Convergence to those of Native Households**

A comparison of the conditions under which immigrants and natives are housed serves two purposes. First, it documents one aspect of the socioeconomic assimilation experienced by immigrants as their duration of residency in the United States increases. Several studies document the degree to which immigrant earnings converge toward those of natives. There is some evidence documenting the rate at which immigrant homeownership rates converge toward the relatively high homeownership rates of the native born.<sup>15</sup> We update and extend this research on the assimilation of the foreign born by documenting the convergence in housing consumption through 2000 and by considering important dimensions of this convergence beyond tenure choice.

15. For immigrant earnings see Borjas (1985, 1995); Cortes (2004); for homeownership see Myers and Lee (1996, 1998); Borjas (2002).

**Figure 6. Median Rent Burdens versus Index of Regulatory Stringency (Malpezzi Index), 106 MSAs in 1980, 1990, and 2000**



Second, the comparison of immigrant and native housing consumption patterns reveals the extent to which immigrants compete with natives for different kinds of housing. The degree of intergroup competition will depend on the degree of similarity between housing demands and housing consumption outcomes. The following comparisons assess the extent of overlap. They also facilitate the identification of those native households that are most likely to compete with immigrants for housing.

Table 1 summarizes housing consumption outcomes for immigrant households and native households in 2000.<sup>16</sup> Immigrant households are further stratified by the year of arrival of the household head in the United States. The table reveals several notable differences between the housing patterns of immigrants and natives. First, immigrants are considerably less likely than natives to own their residences. While 69 percent of native households are homeowners, slightly more than half of immigrant households are homeowners. Cohorts of immigrants arriving earlier

16. Households are defined as “immigrant” if the household head is foreign born and as “native” if the household head was born in the United States.

**Table 1. Average Housing Consumption Characteristics for Immigrant and Native Households, 2000**

	<i>Arrival of immigrant households</i>			<i>Native households</i>
	<i>1991 to 2000</i>	<i>1981 to 1990</i>	<i>Before 1981</i>	
A. Fraction				
Fraction of owner-occupants	0.233	0.439	0.650	0.686
<i>Number of rooms</i>				
One	0.109	0.073	0.038	0.015
Two	0.199	0.154	0.081	0.036
Three	0.211	0.198	0.147	0.083
Four	0.191	0.166	0.146	0.148
Five	0.129	0.155	0.183	0.213
Six	0.072	0.111	0.159	0.198
Seven	0.040	0.062	0.104	0.132
Eight	0.025	0.041	0.071	0.089
Nine or more	0.023	0.039	0.069	0.086
<i>Number of bedrooms</i>				
None	0.133	0.104	0.057	0.020
One	0.324	0.255	0.172	0.115
Two	0.301	0.276	0.259	0.270
Three	0.165	0.231	0.321	0.413
Four	0.062	0.106	0.149	0.149
Five or more	0.015	0.026	0.041	0.032
<i>Number of families in unit</i>				
One	0.806	0.847	0.908	0.903
Two	0.132	0.113	0.076	0.083
Three or more	0.034	0.023	0.011	0.009
<i>Units in structure</i>				
Single-family	0.291	0.464	0.606	0.668
Mobile home	0.037	0.036	0.032	0.073
Two to four	0.165	0.153	0.113	0.081
More than four	0.591	0.413	0.280	0.192
Complete kitchen	0.985	0.986	0.991	0.994
Complete plumbing	0.987	0.983	0.991	0.995
B. Number				
<i>Persons per room</i>				
25th percentile	0.500	0.571	0.333	0.286
50th percentile	1.000	1.000	0.500	0.400
75th percentile	1.333	1.500	1.000	0.600

Source: Figures tabulated from the 2000 One Percent Public Use Microdata Sample (PUMS) from the 2000 Census. Classification of households is based on the immigrant status and year of arrival of the household head.



have higher homeownership rates than cohorts arriving later. These differences may reflect the effect of time in the United States on the likelihood of homeownership (and thus the process of assimilation along this dimension) or systematic differences among cohorts in the economic determinants of home purchases. We return to this question shortly.

Immigrants and natives reside in dwellings of different sizes. Immigrant households generally occupy smaller units than natives, although the differences between the distributions of rooms and bedrooms consumed narrow as immigrants' time in the United States increases. Given that immigrant households are somewhat larger than native households, the smaller unit sizes of immigrants translate directly into a greater likelihood of overcrowding.<sup>17</sup> The median number of persons per room is 1.0 for immigrant households arriving after 1980, 0.5 for immigrants arriving before 1980, and 0.4 for native households.

There are also substantial differences in the likelihood of residing in a single-family detached structure. Only 29 percent of the most recent immigrants reside in single-family detached housing. This figure is larger for immigrants arriving during the 1980s (46 percent) and for immigrants arriving before 1980 (61 percent) but is still lower than the comparable rate for natives (67 percent). Conversely, immigrant households are more likely to reside in large, multiunit structures. While only 19 percent of native households reside in structures with more than four units, 59 percent of immigrants arriving during the 1990s, 41 percent of immigrants arriving during the 1980s, and 28 percent of immigrants arriving before 1980 reside in such structures.

Finally, there are only small differences in the proportion of immigrant- and native-rented units with complete kitchen and plumbing facilities. By the end of the twentieth century, complete kitchen and plumbing facilities are nearly universal.

As noted, differences by arrival cohort may reflect one dimension of a broad assimilation process among immigrants, one in which housing consumption patterns converge toward those of natives over time. Alternatively, the cross-cohort differences in housing outcomes may reflect differences across cohorts in the economic determinants of housing con-

17. The average household size in 2000 was 3.3 for immigrants arriving between 1991 and 2000, 3.9 for immigrants arriving between 1981 and 1990, 3.0 for immigrant households arriving prior to 1980, and 2.5 for native households (authors' calculations with PUMS microdata, 2000).

sumption. Cross-cohort differences in demand may arise from cross-cohort changes in the skill endowments of immigrants and changes in the labor markets in which they compete. Thus cohort effects may create the impression of convergence in housing consumption when little assimilation is actually taking place.<sup>18</sup>

Figures 7, 8, and 9 present synthetic cohort estimates reporting changes in housing outcomes for immigrants with time in the United States.<sup>19</sup> These synthetic cohorts track immigration cohorts across separate censuses. We use data on year of immigration and age to create a longitudinal estimate of the relationship between time in the United States and measures of housing consumption. For example, figure 7 shows homeownership rates for immigrant household heads aged 25 to 34 years at time of arrival, who arrived between 1965 and 1969, at four points in time (1970, 1980, 1990, and 2000). For subsequent censuses, we age the cohort accordingly. Thus the arrival cohort extracts are restricted to those aged 35 to 44 in the 1980 Census, 45 to 54 in the 1990 Census, and 55 to 64 in the 2000 Census. We impose analogous restrictions on the 1975–79, 1985–89, and 1995–99 arrival cohorts.

As shown in panel A, homeownership rates for young immigrants increase sharply during the first decade after arrival and continue to increase in subsequent decades. After a decade in the United States, immigrant homeownership rates for all cohorts triple or quadruple, but the levels remain lower for more recent immigrants than for earlier cohorts. The homeownership rate for the 1965–69 arrival cohort rises from 12.8 per-

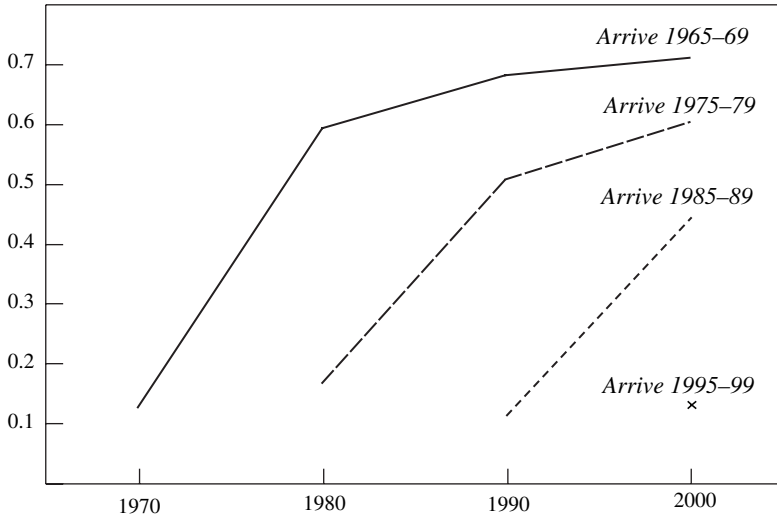
18. Borjas (1985, 1995, 1999) documents trends in the absolute and relative educational attainment of immigrant arrival cohorts in the United States. Overall, average educational attainment of subsequent immigrant cohorts arriving since 1965 has increased, with the proportion that are high school dropouts declining and the proportion with a college degree or more increasing. However, the increase in average educational attainment observed for immigrants is considerably smaller than the comparable increases observed among the native population. Consequently, average earnings differentials (measured at either the hourly or annual level) between immigrants and natives have widened over the past three decades. Most of this increase can be explained by the increase in the educational attainment differential between natives and immigrants. Most of the increase in the educational attainment differential is explained by a shift in the national origin composition of the immigrant inflow into the United States from predominantly western European to predominantly Asian and Latin American.

19. The application of synthetic cohorts in this context was first applied by Borjas (1985) in an analysis of convergence in the wages of immigrant and native workers. This technique has now become a standard for analyzing changes in economic outcomes for immigrants with time in the United States.

**Figure 7. Measures of Convergence in Home Ownership Rates**

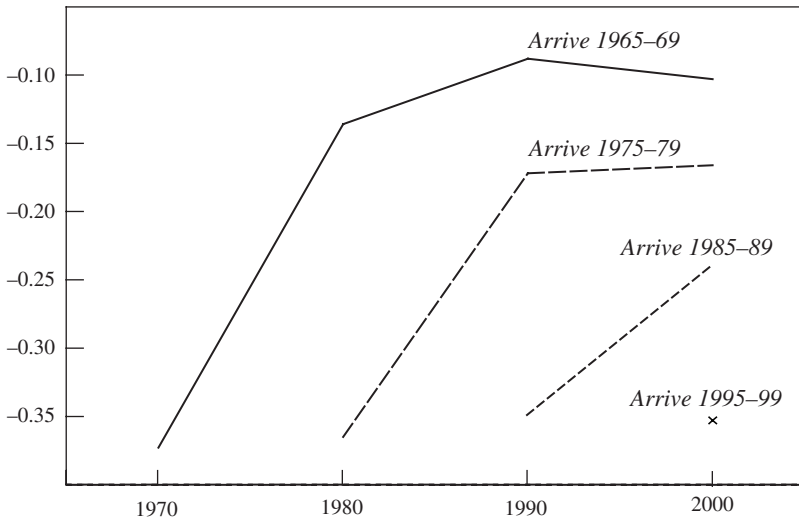
**A. Immigrant homeownership rates, by census year and arrival cohort, aged 25 to 34 at census year of arrival**

Proportion home ownership



**B. Difference in homeownership rate between immigrants and native households of similar ages, by arrival cohort and census year**

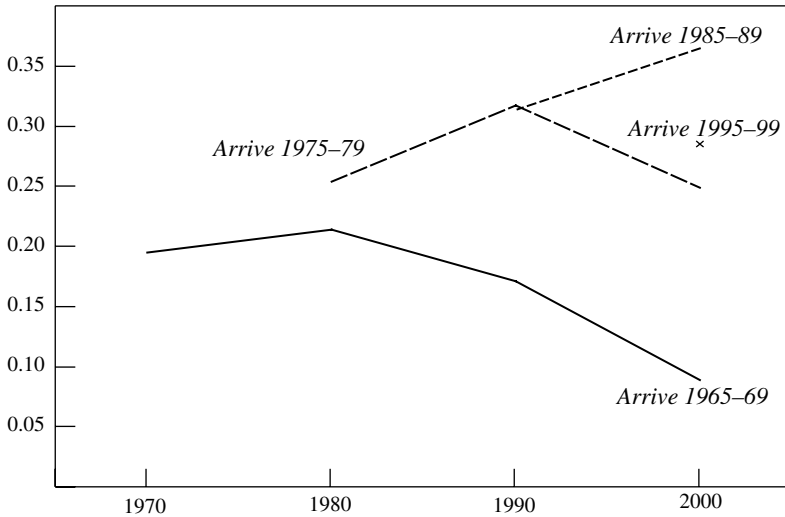
Native minus immigrant



**Figure 8. Measures of Convergence in the Proportion Residing in Crowded Conditions**

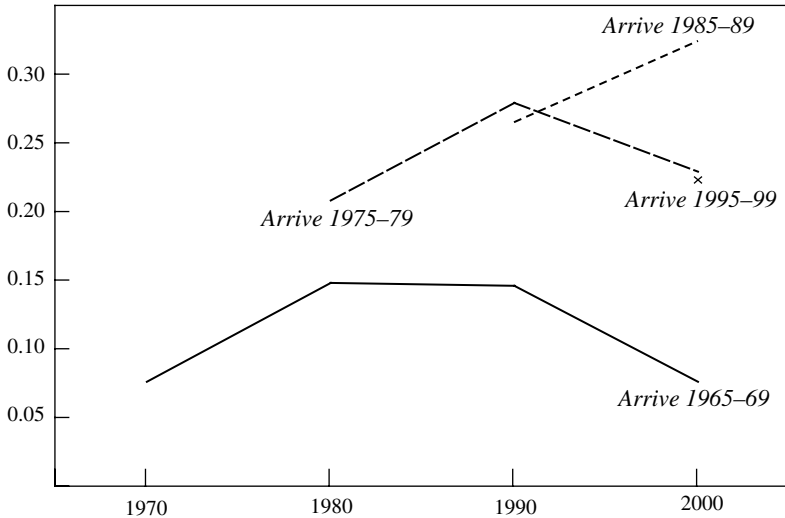
**A. Proportion of immigrants residing in crowded conditions, by census year and arrival cohort, aged 25 to 34 at census year of arrival**

Proportion in crowded conditions



**B. Difference in the proportion in crowded conditions between immigrants and native households of similar ages, by arrival cohort and census year**

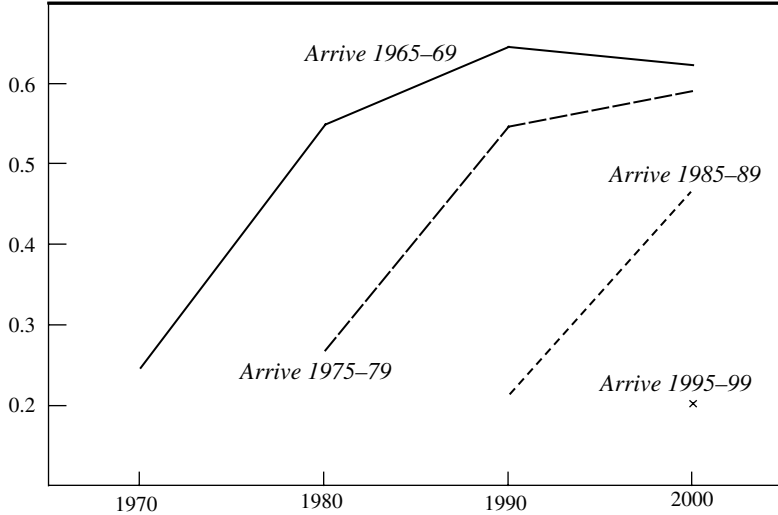
Native minus immigrant



**Figure 9. Measures of Convergence in the Proportion Residing in Single-Family Structures**

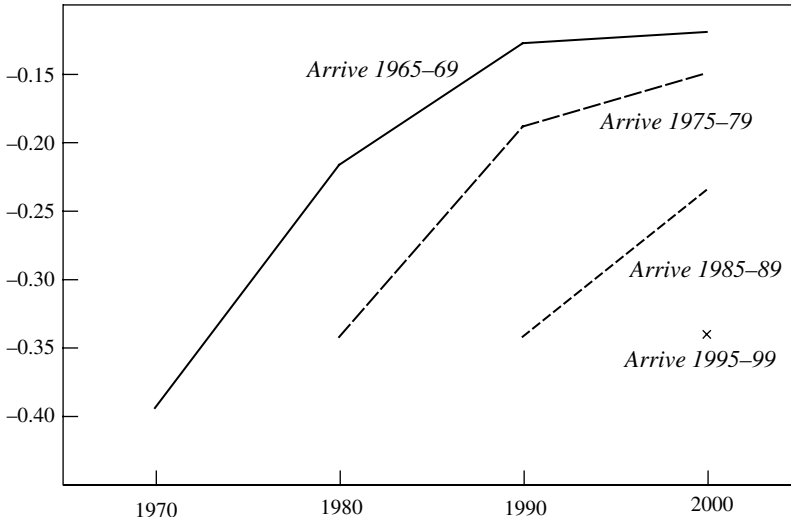
**A. Proportion of immigrants residing in single-family structures, by census year and arrival cohort, aged 25 to 34 at census year of arrival**

Proportion residing in single-family structures



**B. Difference in the proportion residing in single-family structures between immigrants and native households of similar ages, by arrival cohort and census year**

Native minus immigrant



cent to 68.2 percent after two decades and 71.2 percent after three decades. For the 1975–79 cohort, the homeownership rate rises from 16.9 percent to 60.4 percent after two decades in the United States.

Figure 7 also reports the difference in homeownership rates between immigrants and native-born household heads of comparable age as a function of immigrants' time in the United States.<sup>20</sup> Differences in homeownership rates decline during the first two decades after arrival, though there is a small increase during the third decade for the earliest cohort. This indicates a convergence to the homeownership patterns of native households as immigrants spend more time in the United States.

Adjusting for the household head's educational attainment, age, and household income explains very little of the difference in homeownership rates between immigrants and natives. Borjas shows that the most important factor explaining the immigrant-native homeownership gap is the differential distribution of these two populations across metropolitan areas.<sup>21</sup> Immigrants are highly concentrated in a set of metropolitan areas with below-average homeownership rates for both immigrants and natives. Thus holding the metropolitan area of residence constant explains much of the remaining gap.<sup>22</sup>

Figure 8 reports decennial estimates of the level of overcrowding (that is, more than one person per room) for the same synthetic cohorts. All cohorts experience an increase in overcrowding during the first decade after arrival (and an increased disparity between the overcrowding of immigrants and native-born households of the same age). This increased overcrowding declines with time in the United States for the 1965–69 and 1975–79 arrival cohorts. Given the large increases in homeownership rates experienced over this range of the time-in-U.S. profile, these patterns suggest that relatively new immigrant households make an initial trade-off of space for homeownership. Consequently, the immigrant-native difference in the proportion crowded widens initially but then narrows in subsequent decades.

20. That is to say, we compare immigrant homeownership rates to a sample of native-born households where the household heads are restricted to the same age range.

21. Borjas (2002) also finds that immigrant homeownership rates increase in the size of the co-national population of the MSA—that is, the bigger the co-ethnic enclave the greater the likelihood that the immigrant households are homeowners.

22. We are unable to adjust for metropolitan area fully due to the fact that the 2000 one percent PUMS separately identifies only 106 of the almost 300 metropolitan areas in the United States.

Figure 9 documents the rates at which immigrant households move out of large multiunit structures and into single-family detached units. The figure shows a pronounced movement of immigrant households into single-family detached housing.<sup>23</sup> There are slight reductions in the rate of convergence for later arrival cohorts. There are also large relative cross-census increases in the population of immigrants residing in single-family homes, compared with native households of the same ages. For example, the 1965–69 cohort differential drops from 39 to 12 percentage points over thirty years in the United States. Comparable changes are observed for the latter cohorts.

As a final comparison of the housing consumption patterns of immigrants and the native born, we characterize the quality of both rental and owner-occupied housing units occupied by immigrants and native households by the position of each unit in its MSA-specific housing price distribution. Specifically, for each housing unit in an identified MSA in the 2000 one percent PUMS, we calculate the unit's percentile position within the MSA's rent distribution (for rental units) or the unit's percentile position within in the MSA's house value distribution (for owner-occupied units). We then calculate the quartile values of these percentile positions for immigrants and natives in rental and owner-occupied housing. If immigrants, on average, consume lower-quality housing, then the quartile values for the immigrant distribution should be below the twenty-fifth, fiftieth, and seventy-fifth percentiles of the housing quality distribution. For example, if the median immigrant in the rental market consumes a unit at the fortieth percentile of the MSA-specific rental distribution, then immigrant households are disproportionately concentrated in lower-quality rental housing.

Table 2 presents these figures for native and immigrant households stratified by arrival cohort. We present separate calculations for those in the rental market and those in the owner-occupied housing market. Consider the rental market: the 1991-2000 cohort of immigrants is not particularly concentrated in low-quality rental dwellings. The immigrant household at the twenty-fifth percentile of the immigrant renter distribution occupies a unit at the twenty-eighth percentile of the quality distribution in its metropolitan area. Similarly, the median immigrant renter

23. Note, homeownership and residence in single-family detached housing are not synonymous. Slightly less than one-third of rental units in 2000 were single-family detached dwellings.

**Table 2. Position of Immigrant and Native Households in Metropolitan Area Rental and Home Value Distributions, 2000**

	<i>Arrival of immigrant households</i>			<i>Native households</i>
	<i>1991 to 2000</i>	<i>1981 to 1990</i>	<i>Before 1981</i>	
<i>Position in rent distribution<sup>a</sup></i>				
25th percentile	28.04	25.61	20.24	26.43
50th percentile	49.40	45.99	43.88	52.44
75th percentile	71.81	68.66	70.80	77.07
<i>Position in housing value distribution<sup>b</sup></i>				
25th percentile	16.66	16.19	20.32	26.42
50th percentile	39.91	35.82	44.26	51.76
75th percentile	65.45	61.08	68.06	76.11

Note: The sample is restricted to those households residing in one of the 106 metropolitan areas separately identified in the one percent 2000 PUMS. The figures in the table are the quartile break points for immigrant and native renter and homeowner households. Classification of households is based on the immigrant status and year of arrival of the household head, as well as an indicator of whether the household owns or rents the current residence.

a. Percentile position of the reported gross rent in the metropolitan-area-specific rent distribution (as calculated from the PUMS).

b. Percentile position of the reported value of the house in the metropolitan-area-specific rent distribution (as calculated from the PUMS).

household appears to rent the median-quality rental unit. However, immigrants are slightly underrepresented at the higher end of the rental market. For recent arrivals, the renter in the seventy-fifth percentile occupies a unit at the seventy-second percentile of the quality distribution. Interestingly, the quality of units rented by immigrants declines for earlier arrivals (for example, the median immigrant renter for the 1981 to 1990 cohort rents a forty-sixth percentile unit, while the immigrant renter arriving before 1981 rents a unit at the forty-fourth percentile). This decline in rental housing quality for earlier cohorts probably reflects a process by which those who remain in rental housing after lengthy periods of time in the United States are negatively selected in terms of income and assets. The distribution of native households in the rental market is slightly skewed toward higher-quality units.

In the owner-occupied market, the distribution of immigrants in the housing quality hierarchy (as measured by self-reported housing values) is skewed toward lower-quality units for all cohorts. The median immigrant homeowner in the 1991-2000 cohort occupies a unit in the fortieth percentile of the distribution of house values; the analogous values for earlier immigrants are the thirty-sixth percentile for the 1981 to 1990 cohort and the forty-fourth percentile for the cohort arriving prior to



1981. In comparison, the median native homeowner household occupies a unit at the fifty-second percentile of the quality distribution.

The lack of a quality increase in housing consumed across cohorts does not indicate that the quality of immigrant housing is not converging toward the quality of native housing. Movement from the rental into the owner-occupied market is perhaps the clearest indication of an increase in the quality of housing consumed. The large shifts between tenure types, the increase in unit size, and the shift out of multiunit structures into single-family detached housing all support this proposition. Nonetheless, table 2 indicates that immigrants, even when homeowners, are somewhat more concentrated in lower-cost housing.

### **Identifying Natives Likely to Compete with Immigrants for Housing**

The above comparisons indicate that those native households whose housing outcomes are most likely to be affected by competition with immigrants should be relatively low-income renters. Now we use the relationship between housing characteristics and the nativity status of the household head to identify those native households that are the most likely to compete with immigrant households in the housing market.

We begin by modeling the relationship between observed housing characteristics and the nativity of the household head. Specifically, we first estimate the limited dependent variable model

$$(1) \text{ Prob}(I_i = 1) = \Phi(\alpha + \beta \text{Owner}_i + \delta' \text{Percentile}_i + \gamma' \text{Characteristics}_i + \text{Owner}_i * \varphi' \text{Percentile}_i + \text{Owner}_i * \kappa' \text{Characteristics}_i)$$

where  $I_i$  is a dummy variable indicating that household  $i$  is an immigrant household,  $\text{Owner}_i$  is a dummy variable indicating that the unit is owner-occupied,  $\text{Percentile}_i$  is a vector of two variables, the position of the unit in the MSA-specific rental or home value distribution and the position squared,  $\text{Characteristics}_i$  is a vector of unit characteristics,  $\alpha$ ,  $\beta$ ,  $\delta$ ,  $\gamma$ ,  $\varphi$ , and  $\kappa$  are parameters to be estimated, and  $\Phi$  is the cumulative normal distribution. This probit model fully interacts all housing unit characteristics with an indicator for owner-occupied units. Table A-1, in the appendix to this chapter, presents the estimation results using household data

**Table 3. Average Characteristics of Native Households, by Quartiles of the Likelihood of Competition with Immigrants for Housing**

	<i>Quartiles of the distribution of the predicted probability that an immigrant household competes for the unit</i>				<i>Top decile</i>
	<i>Lowest</i>	<i>Q2</i>	<i>Q3</i>	<i>Highest</i>	
Predicted likelihood	0.021	0.046	0.087	0.211	0.299
Renter	0.005	0.068	0.499	0.858	0.948
Age	52.688	51.950	49.099	44.277	43.671
Male head	0.726	0.695	0.560	0.516	0.533
Educational attainment					
<9 years	0.025	0.041	0.068	0.075	0.091
9 to 11 years	0.040	0.064	0.097	0.091	0.090
12 years	0.225	0.276	0.325	0.299	0.280
13 to 15 years	0.285	0.297	0.298	0.298	0.289
16 plus years	0.423	0.321	0.212	0.237	0.250
Black	0.063	0.114	0.201	0.213	0.213
Hispanic	0.037	0.058	0.100	0.156	0.185
Persons per household	2.585	2.783	2.622	2.114	1.858
Persons per room	0.371	0.436	0.505	0.773	1.052
Household income/poverty	4.025	3.656	2.932	2.570	2.384
Housing costs/income (median)	0.145	0.146	0.189	0.245	0.270

Note: Sample of natives is stratified by the predicted probability that an immigrant competes for their housing unit based on the parameters of the probit regression reported in table A-1.

from the 2000 PUMS. The data extract is restricted to those households that are in one of the 106 identified metropolitan areas.<sup>24</sup> We also narrow the definition of immigrant households to those households in which the household head has immigrated during the previous twenty years. The model adjusts for a full set of dummies indicating the number of rooms in the units, the number of bedrooms, and the structure type.

Next, we use the parameters reported in table A-1 to estimate the likelihood that an immigrant competes for the housing unit occupied by each native household in the sample. Natives whose dwellings have higher predicted probability are more likely to be in competition with immigrants.

Table 3 presents average characteristics of native households who fall into four quartiles reflecting the intensity of their competition with immigrants for housing. The first four columns present figures for each quar-

24. We impose this restriction since we cannot calculate a position in the local quality distribution without an MSA identifier.

tile while the fifth column presents average characteristics of the 10 percent of native households most likely to compete with immigrants for housing.

For the native born, the proportion of renters increases uniformly with the predicted probability of competition with immigrants. Approximately 86 percent of households in quartile 4 (those households most likely to compete with immigrants for housing) rent, while less than 1 percent of households in quartile 1 are renters. For the top decile, 95 percent of households are renters. In addition, the proportion of female-headed households rises and the average age of the household head declines with the predicted probability of competition with immigrants. The educational attainment of the household head declines in the predicted likelihood, while the proportion black or Hispanic increases uniformly. Households in the higher quartiles consume less housing per person. For example, the number of persons per room is 0.77 for quartile 4 households compared with 0.37 for households in the first quartile. In addition, higher quartile households have lower incomes relative to the poverty line. Finally, those native households who occupy units that are the most similar to those occupied by immigrant households devote a relatively larger fraction of monthly income to housing expenses.

Thus, based on housing characteristics alone, native households that are poor, minority, and renters are most likely to compete with immigrants for housing. These households tend to reside in more crowded conditions than native households not in competition with immigrants and also tend to devote a larger proportion of household income to housing expenditures. Whether immigration contributes to the higher cost burdens and greater overcrowding is the next question we consider.

### **The Impact of Recent Immigrants on Native Renter Housing Outcomes**

We rely on a series of intermetropolitan area comparisons of native housing outcomes to assess whether native renter households fare worse in metropolitan areas with large immigrant populations. We estimate the cross-sectional relationship between the proportion of recent immigrant households and average native housing outcomes, as well as the relationship between the within-MSA change in the proportion immigrant and

the comparable changes in native housing outcomes. Our analysis is limited to the 91 largest MSAs in the nation.<sup>25</sup>

We present alternative sets of regression estimates of the impact of the immigrant population on housing outcomes for natives. First, we assess the impact of immigration on average outcomes for all native renter households. We estimate separate regression models for levels and changes. (Presumably, the regressions in decennial differences provide more stringent empirical tests than the cross-sectional comparisons.) Second, we estimate separate relationships for native renters that are most likely to compete with recent immigrant households for housing and for natives who are least likely. If immigration matters, one would expect its importance to be larger for those native households most likely to compete with immigrant households. We investigate this proposition by testing the interaction between the likelihood of being in competition with immigrants and the proportion immigrant on native housing outcomes.

We estimate the impact of international immigration on four housing outcomes for native renter households: average gross rents (natural log), the median rent-to-income ratio, the average number of persons per room, and the proportion of native households residing in crowded conditions. All outcomes are measured at the MSA level. Gross rents are the simplest and most straightforward measure of housing costs available in the census data.<sup>26</sup> There is some prior evidence that immigration levels are associated with high rents.<sup>27</sup> Rent-to-income ratios provide a measure of housing expenditures that are adjusted for differences in price levels and purchasing power. The analysis of the average number of persons per room provides a consumption-based estimate of the impact of immigrants on native housing outcomes. To the extent that immigrants drive up housing rents, native households should substitute away from housing in their consumption bundles and thus consume less housing per person. Finally, the proportion crowded provides an alternative average measure of consumption that is less sensitive to large households.

25. Of the 106 MSAs separately identified in the 2000 one percent PUMS, only 91 can be matched directly to MSA definitions from 1990 and 1980.

26. Recall that Saiz (2003a) and Susin (2001) found that an exogenous shock of immigration did affect rent levels in Miami.

27. Saiz (2003b) found a positive relationship between growth in the immigrant population and growth in the Department of Housing and Urban Development's (HUD) measures of "Fair Market Rents," that is, estimates of the price of just-standard housing of a given size at either the 40th or 45th percentile of the rental distribution.

*The Effect of Immigrants on Rents and Rent Burdens  
of Native Households*

Tables 4 and 5 present regression estimates of the impact of the proportion immigrant in 91 MSAs on two measures of housing outcomes for natives. The regressions control for year effects and for changes in the average observable characteristics of the housing stock. The first two regressions in each table are based on levels. The remaining six regressions are based on within-decade changes. Two models present estimates where the 1980–90 and 1990–2000 changes have been pooled; the final four regressions present separate estimates by decade.<sup>28</sup> For the log rents models in table 4, the regression-adjusted levels model and the regression-adjusted pooled change model yield similar point estimates of the impact of immigration on the average log gross rents paid by native renter households. In both specifications, the coefficient on the proportion immigrant is roughly 0.6. These estimates imply that moving from a metropolitan area where the proportion of recent immigrant households is 0 to one where the proportion is 0.3 (the range of variation observed in the data) would increase average log rents by 0.18, or roughly 20 percent. The separate change estimates by decade indicate larger impacts of immigration during the 1980s and an insignificant impact during the 1990s.

In contrast, table 5 reports little or no evidence that immigrants increase rent-to-income ratios for native households. While the coefficient on proportion immigrant is positive and significant in the simplest specification with no covariates, adjusting for average characteristics of the housing stock eliminates this effect. In the six regressions based on changes, the proportion immigrant is always insignificantly different from zero.

The contrast between the results for gross rents and rent-to-income ratios suggests that while nominal rents are higher in cities with large immigrant populations, real rent burdens are not. That is, a metropolitan area with a large immigrant population generally has higher rents than one with no immigrant population, but a concurrent increase in income in the former city is sufficient to keep rent burdens unchanged.

We next test for the impact of immigration on the housing outcomes of those natives who are most likely to be in competition with immigrants

28. The regression models presented are not weighted. Our conclusions are unaffected by weighting the observations by population.

**Table 4. Regression Estimates of the Effect of the Proportion of Immigrant Households on the MSA-Average Log Rents of Native Renter Households**

	<i>Levels, all years pooled</i>		<i>Changes</i>					
			<i>All observations</i>		<i>1980–90</i>		<i>1990–2000</i>	
Proportion immigrant	1.783 (0.158)	0.577 (0.280)	0.823 (0.289)	0.655 (0.375)	3.204 (0.804)	1.937 (0.962)	0.437 (0.282)	0.270 (0.400)
<i>Rooms</i>								
Two		6.008 (1.898)		0.165 (1.505)		1.582 (3.476)		0.489 (1.517)
Three		4.142 (1.742)		1.256 (1.507)		4.017 (3.282)		0.958 (1.606)
Four		4.724 (1.658)		-0.089 (1.151)		1.804 (3.371)		0.352 (1.578)
Five		4.995 (1.665)		0.715 (1.496)		3.057 (3.126)		0.406 (1.624)
Six		4.056 (1.752)		0.102 (1.579)		2.156 (3.216)		0.263 (1.727)
Seven		6.013 (2.229)		0.213 (1.738)		5.868 (3.824)		-0.267 (1.866)
Eight		2.652 (2.980)		1.648 (1.964)		0.797 (4.517)		1.808 (2.077)
Nine		2.476 (3.222)		-1.666 (2.292)		1.551 (5.301)		-1.110 (2.540)
<i>Bedrooms</i>								
Two		-4.149 (1.286)		-1.345 (1.441)		-5.711 (3.357)		-0.790 (1.443)
Three		-4.340 (1.233)		-0.845 (1.434)		-4.470 (3.166)		-0.486 (1.495)
Four		-4.741 (1.197)		-1.133 (1.495)		-6.045 (3.253)		0.151 (1.568)
Five		0.377 (1.650)		-1.552 (1.619)		-4.385 (3.497)		-1.265 (1.737)
Six		-4.127 (3.495)		-5.394 (2.894)		-8.738 (6.193)		-3.303 (3.218)
Mobile		-1.394 (0.508)		-1.724 (0.598)		-2.250 (1.139)		-1.711 (0.641)
Single		-0.085 (0.114)		0.209 (0.222)		0.510 (0.340)		-0.677 (0.328)
Less than 4 units		-0.310 (0.129)		0.510 (0.341)		0.288 (0.434)		-0.655 (0.467)
R <sup>2</sup>	0.896	0.931	0.767		0.151	0.307	0.026	0.318
N	273	273	182	182	91	91	91	91

Note: Standard errors are in parentheses. All regressions include a constant term. The level regressions include dummy variables for census year, as do the pooled change regressions. Regressions are based on 91 MSAs observed in 1980, 1990, and 2000.

**Table 5. Regression Estimates of the Effect of the Proportion of Immigrant Households on the MSA-Average Rent-to-Income Ratios of Native Renter Households**

	<i>Levels, all years pooled</i>		<i>Changes</i>					
			<i>All observations</i>		<i>1980–90</i>		<i>1990–2000</i>	
Proportion immigrant	0.089 (0.018)	-0.034 (0.029)	0.002 (0.041)	-0.023 (0.050)	-0.002 (0.110)	-0.129 (0.123)	0.003 (0.045)	0.058 (0.059)
<i>Rooms</i>								
Two		0.070 (0.198)		-0.224 (0.204)		0.642 (0.446)		-0.419 (0.222)
Three		0.014 (0.182)		-0.004 (0.204)		0.861 (0.421)		-0.158 (0.235)
Four		-0.169 (0.174)		-0.343 (0.205)		0.823 (0.432)		-0.603 (0.231)
Five		-0.256 (0.174)		-0.275 (0.202)		0.569 (0.401)		-0.412 (0.237)
Six		0.008 (0.184)		-0.167 (0.214)		0.723 (0.412)		-0.305 (0.253)
Seven		0.000 (0.233)		-0.198 (0.235)		0.522 (0.491)		-0.291 (0.273)
Eight		-0.510 (0.311)		-0.123 (0.266)		0.939 (0.579)		-0.101 (0.304)
Nine		-0.400 (0.337)		-0.541 (0.311)		0.631 (0.680)		-0.386 (0.372)
<i>Bedrooms</i>								
Two		-0.112 (0.134)		-0.128 (0.195)		-1.250 (0.431)		0.219 (0.211)
Three		0.097 (0.129)		0.080 (0.194)		-1.147 (0.406)		0.450 (0.218)
Four		-0.147 (0.125)		-0.077 (0.203)		-1.068 (0.417)		0.164 (0.229)
Five		0.249 (0.173)		-0.255 (0.219)		-1.476 (0.449)		0.044 (0.254)
Six		-0.522 (0.365)		-0.393 (0.392)		-1.595 (0.795)		-0.181 (0.471)
Mobile		-0.072 (0.053)		-0.131 (0.081)		-0.059 (0.146)		-0.163 (0.093)
Single		0.062 (0.011)		0.041 (0.030)		0.069 (0.044)		0.007 (0.048)
Less than 4 units		0.042 (0.013)		-0.008 (0.040)		-0.037 (0.056)		0.045 (0.068)
R <sup>2</sup>	0.132	0.526	0.153	0.340	0.000	0.289	0.000	0.400
N	273	273	182	182	91	91	91	91

Note: Standard errors are in parentheses. All regressions include a constant term. The level regressions include dummy variables for census year, as do the pooled change regressions. Regressions are based on 91 MSAs observed in 1980, 1990, and 2000.

for housing. Using the results presented in table A-1, we estimate the likelihood that each native renter household in each metropolitan area-year combination competes with an immigrant for housing. This probability is used to stratify native households in each metropolitan area and each year into quartiles. We then compute average native housing outcomes by metropolitan area, quartile, and census year. We test whether the effect of immigration on rents and rent burdens is larger for higher quartiles. Specifically, we estimate several variants of the model

$$(2) \quad \text{Outcome}_{itq} = \beta_0 + \beta_1 Q_{itq}^2 + \beta_2 Q_{itq}^3 + \beta_3 Q_{itq}^4 + \delta_0 \text{immigrant}_{itq} \\ + \delta_1 Q_{itq}^2 * \text{immigrant}_{itq} + \delta_2 Q_{itq}^3 * \text{immigrant}_{itq} \\ + \delta_3 Q_{itq}^4 * \text{immigrant}_{itq} + \varepsilon_{itq},$$

where  $i$  indexes metropolitan areas,  $t$  indexes census years, and  $q$  indexes the four quartiles.  $\text{Outcome}_{itq}$  is the average housing outcome for native households,  $\text{immigrant}_{itq}$  is the proportion of households that are recent immigrants, and  $Q_{itq}^j$  for  $j = (2,3,4)$  are dummy variables indicating the second, third, and fourth quartiles.  $\beta_0$  through  $\beta_3$  and  $\delta_0$  through  $\delta_3$  are parameters, and  $\varepsilon_{itq}$  is a disturbance term. To the extent that immigrants drive up housing costs for native renter households, one would expect larger impacts for those households in greater competition with immigrants for housing. Thus a fairly stringent test for an effect of immigrants on housing outcomes for natives would be a test of whether the impact increases across quartiles—i.e.,  $0 < \delta_1 < \delta_2 < \delta_3$ .

Table 6 presents estimates of this model for the average log of gross rents and median rent-to-income ratios. For each dependent variable, the table presents four specifications: first, a regression in levels with a complete set of quartile dummies, the proportion immigrant, and interaction terms between the quartile dummies and the proportion immigrant. Second is a regression in levels including the variables in equation 2 as well as all housing characteristics control variables reported in table 5. Third is a regression using decennial changes, including all equation 2 variables. Finally, we present a regression using decennial changes with the variables in equation 2 and the housing characteristics control variables.

The regressions in levels yield little evidence of a progressively larger impact of immigration on the gross rents of native households more likely to be in competition with immigrants. In both regressions, the



**Table 6. Regression Estimates of the Effect of the Proportion of Immigrant Households on the Log Rents and Rent-to-Income Ratios of Native Renter Households, by Predicted Competition with Immigrant Households**

	<i>Dependent variable: Ln(gross rent)</i>				<i>Dependent variable: Rent/income</i>			
	<i>Levels</i>		<i>Changes</i>		<i>Levels</i>		<i>Changes</i>	
	No	Yes	No	Yes	No	Yes	No	Yes
Proportion immigrant	2.628 (0.231)	2.148 (0.225)	0.303 (0.289)	0.673 (0.307)	0.068 (0.028)	0.057 (0.028)	0.041 (0.052)	-0.014 (0.057)
Proportion immigrant * Q2	0.342 (0.316)	0.005 (0.305)	1.112 (0.387)	0.348 (0.432)	0.039 (0.038)	0.022 (0.038)	-0.126 (0.070)	-0.026 (0.080)
Proportion immigrant * Q3	-0.116 (0.316)	0.006 (0.299)	0.579 (0.387)	0.011 (0.421)	0.075 (0.039)	0.098 (0.037)	0.050 (0.070)	0.136 (0.078)
Proportion immigrant * Q4	0.155 (0.316)	0.002 (0.340)	0.596 (0.387)	0.023 (0.409)	0.038 (0.038)	-0.094 (0.043)	-0.176 (0.070)	-0.119 (0.076)
Q2	-0.264 (0.017)	-0.984 (0.101)	-0.006 (0.013)	0.007 (0.016)	0.006 (0.002)	-0.036 (0.012)	0.009 (0.002)	0.005 (0.003)
Q3	-0.162 (0.017)	-1.079 (0.133)	0.012 (0.013)	0.019 (0.016)	0.011 (0.002)	-0.052 (0.017)	0.005 (0.002)	0.001 (0.003)
Q4	-0.353 (0.017)	-1.545 (0.208)	0.043 (0.013)	0.059 (0.017)	0.029 (0.002)	-0.093 (0.026)	0.012 (0.002)	0.008 (0.003)
Controls	No	Yes	No	Yes	No	Yes	No	Yes
F test <sup>a</sup>	0.792	0.272	2.751	0.332	1.260	6.960	4.540	4.182
(P value)	(0.500)	(0.847)	(0.041)	(0.806)	(0.286)	(0.000)	(0.003)	(0.006)
R <sup>2</sup>	0.873	0.893	0.721	0.743	0.291	0.365	0.139	0.171
N	1092	1092	728	728	1092	1092	728	728

Note: Standard errors are in parentheses. All regressions include a constant term and dummy variables for census year. Models with control variables include all variables in table 5. Regressions are based on averages of households in four quartiles of 91 MSAs observed in 1980, 1990, and 2000.

a. This provides the test statistic from a test of the joint significance of the three interaction terms.

coefficients on the interaction terms between the quartiles and the proportion immigrant are small and insignificant. Moreover, in both specifications a test of the joint significance of the three interaction terms fails to reject the null hypothesis that the coefficients on these terms are zero. The results from regressing the change in gross rents against the change in the proportion immigrant are similar.

The rent-to-income models also yield no evidence of a differential impact of immigrants on the rent burdens of natives. In the simplest levels model without controls, the impact of immigration for quartile 4 is statistically indistinguishable from that for quartile 1. For the specification including controls, the estimated coefficient for quartile 4 is smaller than that estimated for quartile 1. The models of changes confirm that there is no evidence that rent burdens are higher for native households who are more likely to compete with immigrants in the housing market.

Taken together, these results yield little support for the proposition that competition with immigrants increases the housing costs of native renter households, either in gross terms or relative to income. Although there is evidence that gross rents are positively associated with the relative size of the local immigrant population, household income differentials across MSAs are large enough to compensate for higher nominal rents.

#### *The Effect of Immigrants on Persons per Room and Crowding among Native Households*

In this section, we test whether immigration affects other dimensions of native housing consumption. Table 7 presents regression estimates of the effect of immigrants on two native housing consumption outcomes, persons per room and overcrowding. The regressions control for year effects, MSA differences in the average size of native households (and changes therein), and differences in household income.<sup>29</sup> Panel A presents regression estimates in which the dependent variable is the average number of persons per room. Panel B presents regression estimates for the proportion of native households residing in crowded conditions. Native households in immigrant cities consume fewer rooms per person relative to comparable native households in areas with smaller immigrant populations. Adjusting for household size reduces the impact of the pro-

29. Here, we do not control for the average characteristics of the housing stock since quantity measures are themselves the dependent variables.

**Table 7. Regression Estimates of the Effect of the Proportion of Immigrant Households on the Average Number of Persons per Room and the Proportion in Crowded Conditions among Native Renter Households**

	<i>Changes</i>														
	<i>Levels, all years pooled</i>				<i>All observations</i>				<i>1980 to 1990</i>				<i>1990 to 2000</i>		
	Panel A: Dependent variable: persons per room														
Proportion immigrant	1.683 (0.099)	1.268 (0.058)	1.343 (0.073)	0.502 (0.123)	0.348 (0.064)	0.282 (0.075)	1.831 (0.374)	0.571 (0.183)	0.517 (0.201)	0.286 (0.096)	0.297 (0.065)	0.230 (0.081)			
Household size	...	0.256 (0.010)	0.241 (0.010)	...	0.285 (0.013)	0.281 (0.012)	...	0.302 (0.016)	0.300 (0.016)	...	0.227 (0.022)	0.224 (0.022)			
Household income × 10 <sup>7</sup>	...	...	-9.30 (5.50)	...	...	8.50 (5.10)	...	...	5.10 (7.60)	...	...	9.20 (6.50)			
R <sup>2</sup>	0.518	0.850	0.852	0.114	0.764	0.768	0.213	0.839	0.839	0.090	0.582	0.591			
N	273	273	273	182	182	182	91	91	91	91	91	91			
	Panel B: Dependent variable: proportion of native households in crowded conditions														
Proportion immigrant	0.744 (0.004)	0.521 (0.028)	0.613 (0.034)	0.155 (0.064)	0.077 (0.035)	0.071 (0.041)	1.010 (0.187)	0.378 (0.091)	0.352 (0.100)	0.017 (0.049)	0.022 (0.036)	0.043 (0.045)			
Household size	...	0.138 (0.005)	0.132 (0.005)	...	0.146 (0.007)	0.145 (0.007)	...	0.152 (0.008)	0.151 (0.008)	...	0.107 (0.013)	0.108 (0.013)			
Household income × 10 <sup>7</sup>	...	...	-1.10 (2.60)	...	...	6.80 (2.80)	...	...	2.30 (3.80)	...	...	-2.80 (3.70)			
R <sup>2</sup>	0.443	0.850	0.860	0.031	0.713	0.713	0.246	0.847	0.848	0.001	0.456	0.459			
N	273	273	273	182	182	182	91	91	91	91	91	91			

portion immigrant slightly in the levels, pooled changes, and 1980–90 change regressions, yet immigration is still significant in all models. Adjusting for household income does not affect these estimates. The marginal effect of an increase in the proportion immigrant is considerably larger in the levels regressions than in the changes regressions. Again, we find evidence of a considerably larger effect during the 1980s than the 1990s. The results for models of the proportion of native households residing in crowded conditions are analogous.

Table 8 presents tests for an impact of immigration on the housing consumption outcomes of natives, distinguishing (by quartiles) those that are more likely to be in competition with immigrants for housing. In contrast to the housing expenditures results, the regressions in levels for both dependent variables suggest that immigrants have a much larger impact on native households in the higher quartiles relative to the lower quartiles. For all levels regressions, F tests of the joint significance of the three interaction terms clearly reject the hypothesis that the impact of the proportion immigrant is equal across quartiles. However, when the models are estimated using changes, this pattern disappears. For both outcomes, the proportion immigrant has comparable effects on the natives that are the most likely to compete with immigrants (quartile 4) and those that are the least likely (quartile 1). When controls for changes in household size and household income are added, the models indicate that immigrants have the largest effect on the housing consumption of those native households who are least likely to be in competition with immigrants in the housing market.

## **Conclusion**

While rents and rent-to-income ratios for native households are higher in metropolitan areas with large immigrant populations, our findings suggest that this pattern may have little to do with competition from immigrants. First, average gross rents for natives do increase within metropolitan areas when the immigrant proportion of the population increases, but rent burdens do not. Rent increases in cities with a larger fraction of immigrants are matched by income increases in those cities. Thus these findings provide little support for the proposition that immigration increases the real costs of housing.

Second, the housing consumption patterns of recent immigrants are

**Table 8. Regression Estimates of the Marginal Effect of the Proportion of Immigrant Households on the Average Number of Persons per Room and the Proportion in Crowded Conditions: Native Renter Households, by Predicted Competition with Immigrant Households**

	<i>Dependent variable: persons per room</i>		<i>Dependent variable: proportion crowded</i>	
	<i>Levels</i>	<i>Changes</i>	<i>Levels</i>	<i>Changes</i>
Proportion immigrant	0.354 (0.109)	0.145 (0.068)	0.272 (0.096)	0.148 (0.062)
Proportion immigrant * Q2	0.362 (0.150)	0.101 (0.079)	-0.232 (0.121)	0.047 (0.051)
Proportion immigrant * Q3	0.536 (0.150)	-0.042 (0.081)	-0.340 (0.123)	-0.006 (0.052)
Proportion immigrant * Q4	2.346 (0.150)	1.501 (0.082)	-0.541 (0.122)	0.639 (0.053)
Q2	0.086 (0.008)	0.101 (0.004)	0.010 (0.004)	0.025 (0.005)
Q3	0.081 (0.008)	0.207 (0.005)	0.006 (0.004)	0.021 (0.005)
Q4	0.292 (0.008)	0.554 (0.007)	0.054 (0.004)	0.216 (0.005)
Household Size	...	0.271 (0.005)	0.271 (0.007)	0.143 (0.003)
Household income × 10 <sup>7</sup>	...	-7.930 (2.60)	-3.40 (3.30)	-8.30 (1.70)
F test <sup>a</sup>	98.972 (0.006)	168.123 (0.002)	6.842 (0.000)	70.483 (0.001)
R <sup>2</sup>	0.803 1092	0.945 1092	0.741 728	0.862 1,092
N	1092	1092	728	728

Note: Standard errors are in parentheses. All regressions include a constant term and dummy variables for census year. Regressions are based on averages of households in four quartiles in 91 MSAs observed in 1980, 1990, and 2000.  
a. A test of the joint significance of the three interaction terms.

reasonably distinct, and it is thus possible to identify those native households that are most likely to be in competition with recent immigrants in the housing market. In cross-sectional analyses of MSA-level rents and rent burdens, we find no evidence of a disproportionate effect of immigration on the housing outcomes of those native households most likely to compete with immigrants.

We do find some evidence that native households consume fewer rooms and are considerably more likely to reside in crowded conditions in predominantly immigrant cities. However, our statistical results do not provide much evidence of a disproportionate impact on those native households more likely to compete with immigrants for housing. Taken together, these findings indicate that immigration has little effect on the housing outcomes of native renter households.

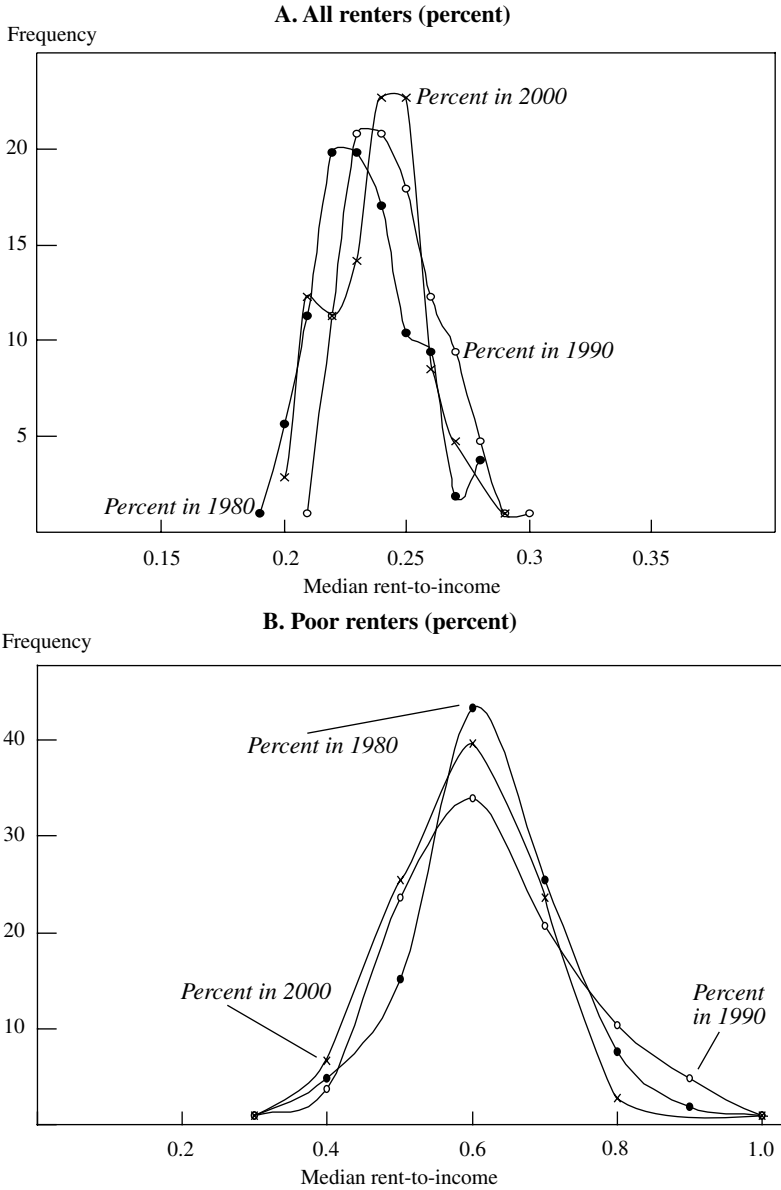
These results contrast with those of Saiz and Susin, who analyzed the effects of immigration shocks in a single metropolitan area and found large effects upon rents during a four-year interval.<sup>30</sup> Our results, based on decennial changes in immigration and housing conditions, suggest that markets adjust tolerably well over a somewhat longer run. Housing supplies increase, prior residents migrate elsewhere, and others—who would have migrated to cities impacted by recent migrations—are diverted to other destinations. Although the extent of international immigration to U.S. cities is large and increasing, the resulting effects on the housing conditions of natives are quite small—at least when markets have reasonable time periods to adjust.

Our results on the evolution of immigrant housing patterns with time in the United States indicate a fair degree of upward mobility through the housing quality hierarchy. Our findings also indicate a greater degree of convergence to the circumstances of natives along these housing dimensions than is commonly reported in comparable research on labor market convergence. These findings imply that immigrant wealth accumulation increases with time in the United States at a fairly rapid rate. Given the means and asset tests for eligibility in most U.S. public assistance programs, these patterns also suggest declines in immigrant use of public assistance with time in the United States. In addition, the accumulation of housing wealth among first-generation immigrants is likely to foster the intergenerational mobility of future generations.

30. Saiz (2003a); Susin (2001).

Appendix

Figure A-1. Distribution of MSA-Level Median Rent-to-Income Ratios, 1980, 1990, and 2000, 106 MSAs



**Table A-1. Probability That a Dwelling Is Occupied by a Recent Immigrant, 2000**

	<i>Base effect</i>	<i>Interaction with homeowners dummy</i>
Owner	-0.076 (0.050)	...
Quality percentile	0.013 (0.001)	-0.016 (0.001)
Quality percentile squared ( $\times 10^4$ )	-0.0001 (0.005)	0.0001 (0.008)
<i>Number of bedrooms</i>		
One	-0.037 (0.023)	-0.357 (0.041)
Two	0.336 (0.027)	-0.466 (0.045)
Three	0.596 (0.030)	-0.359 (0.049)
Four	0.869 (0.039)	-0.281 (0.056)
Five plus	1.135 (0.061)	-0.331 (0.075)
<i>Number of rooms</i>		
Two	-0.063 (0.025)	0.477 (0.064)
Three	-0.565 (0.027)	0.733 (0.064)
Four	-0.956 (0.029)	0.357 (0.067)
Five	-1.221 (0.030)	0.289 (0.069)
Six	-1.482 (0.034)	0.342 (0.070)
Seven	-1.599 (0.040)	0.322 (0.075)
Eight	-1.713 (0.049)	0.317 (0.080)
Nine or more	-1.729 (0.058)	0.221 (0.086)
<i>Units in structure</i>		
Single family	-0.080 (0.010)	0.103 (0.017)
Mobile home	-0.265 (0.029)	-0.008 (0.038)
Two to four	0.002 (0.009)	0.344 (0.023)

Note: Standard errors are in parentheses. The model also includes a constant term not reported in the table. Probit model is estimated using 528,465 observations from 2000 PUMS 1 percent sample with MSA identifier.



## *Comments*

**Joseph Tracy:** This paper adds to our understanding of the economic impact of immigrants on native residents in U.S. metropolitan areas. There is a growing empirical literature in labor economics that has examined the immigrant impact on wages of native workers. However, to understand the full economic effect of immigration on domestic households it is important to examine the impact in the housing market. And measuring immigrant impacts on wages and rents should provide a more complete test of the prevailing theoretical arguments in the literature.

As discussed in Borjas, Freeman, and Katz, the wage impacts of immigrants on domestic workers tend to be small when measured at the locality and only begin to emerge as significant as the researcher expands the geographic scope of the analysis. An explanation for this finding is that immigrants into a city tend to displace native workers of similar skills.<sup>31</sup> That is, an influx of immigrants into a city does not necessarily lead to an equivalent outward shift in the local labor supply since native workers affected may choose to migrate to another locality.

The displacement hypothesis would also imply little impact on rents by an influx of immigrants into a city. For the same reason that an influx of immigrants into a city need not lead to an outward shift in the local labor supply, it may not lead to an outward shift in local housing demand. A finding of no significant immigrant impact on rents, when combined with the lack of any significant local wage impacts documented in the labor literature, would provide additional support to the displacement

31. Borjas, Freeman, and Katz (1996); Filer (1992); Frey (1995).

hypothesis. However, a finding of a significant positive immigrant impact on rents would present a challenge to the displacement hypothesis.

In a recent paper, Saiz finds that on average a 1 percent inflow of immigrants into a city is associated with a 1 percent increase in rents.<sup>32</sup> Greulich, Quigley, and Raphael (hereafter GQR), in contrast, find no significant impact of the share of immigrants in a city on the median rent-to-income ratio (table 5). Both studies look at census data and arrive at different answers.<sup>33</sup> How do we reconcile the two sets of empirical findings?

Although it is beyond the scope of this comment to answer this question, I would like to raise a few issues that may point to a reconciliation of the results. Note first that the immigrant control measures differ between Saiz and GQR. Saiz uses the change in the number of immigrants living in a city over a period of time relative to the city population at the outset of that time interval  $(I_{it} - I_{it-1})/P_{it}$ , where  $I_{it}$  is the number of immigrants in city  $i$  in year  $t$ , and  $P_{it}$  is the population of city  $i$  in year  $t$ . In contrast, GQR use the immigrant population share in the city or the change in the immigrant population share:  $I_{it}/P_{it}$  or  $(I_{it}/P_{it}) - (I_{it-1}/P_{it-1})$ .

Which immigrant control variable is more appropriate? The answer may depend on the underlying theoretical model that the researcher is trying to test. Saiz is interested in testing whether a presumed outward shift in the demand for housing resulting from an inflow of immigrants affects rents paid by domestic households. He explicitly has a demand and supply of housing framework in mind and presents a formal model along these lines. Seeing the net change in the stock of immigrants into a city as a fraction of the city population would seem to be an appropriate control variable to measure shifts in the immigrant demand for housing.

GQR do not discuss any theoretical framework in their paper. I believe, though, they also have in mind a model of the demand and supply of housing. I would argue, however, that the GQR immigrant control variable—the immigrant share—may be more appropriate for a quality-of-life (QOL) model.<sup>34</sup> Suppose we wanted to think of immigrants in a city as a potential amenity or disamenity that is consumed by residents of the city along with other city attributes. The immigrant population share in the city would be a natural way to measure the magnitude of this particular city attribute. The predicted impact of variations in the immigrant

32. Saiz (2003b).

33. Saiz (2003b) finds that his basic results are robust across several different data sets.

34. See for example Rosen (1979) and Roback (1982) for details.

population share on wages and rents would depend on whether immigrants are a consumption amenity or disamenity and whether they are also a production amenity or disamenity. The two studies may arrive at different answers in part because implicitly their empirical specifications are addressing different questions.

GQR's finding of no overall impact of the immigrant share on rents might mask an underlying positive impact that is localized to those native households most in competition in the housing market with immigrants.<sup>35</sup> To test for this possibility, GQR construct a competition index in the following manner. For their sample of households they estimate a probit model on an indicator that takes a value of one for an immigrant household, using as control variables an own-versus-rent indicator and various attributes of the house. For each native renter household, GQR use the estimated probit model to calculate a probability that an immigrant household would occupy a similar house. They stratify the sample of native renter households into quartiles based on these calculated probabilities and check to see if the immigrant share variable has differential impacts on rent-to-income ratios in each quartile. The fact that GQR find no significant rent-to-income impacts in any of the four quartiles dispels the hypothesis that there is a positive impact of immigrants on rents that is restricted to those households most likely to compete in the housing market with immigrants. However, in a QOL model it is not clear that these fitted probabilities would have any particular bearing on the estimated impact of the immigrant population share.

A final specification difference between Saiz and GQR has to do with how each controls for income effects on the demand for housing. GQR look at median rent-to-income ratios and estimate the specification in levels and not logs. Saiz uses the change in log median rents and frees up the income elasticity by including income as a control variable. For three of the four rent specifications using census data (table 6), Saiz reports an income coefficient that is less than one.

This finding raises the possibility that the GQR-estimated coefficient on the immigrant population share is subject to a form of left-out-variable bias. This is easiest to illustrate assuming that GQR had estimated

35. This is similar to the labor literature that has looked for wage effects specifically on native workers whose skills were close to those of immigrants.

their specification in logs rather than levels. Suppose that the true specification (simplified here) is given as follows.

$$(1) \quad \ln(R_{it}) = \beta_0 + \beta_1 Y_{it} + \beta_2 \left( \frac{I_{it}}{P_{it}} \right) + \varepsilon_{it},$$

where  $R_{it}$  is the median rent in city  $i$  in year  $t$ , and  $Y_{it}$  is per capita income in city  $i$  in year  $t$ . This can be rewritten with the dependent variable normalized by per capita income.

$$(2) \quad \ln\left(\frac{R_{it}}{Y_{it}}\right) = \beta_0 - (1 - \beta_1)Y_{it} + \beta_2 \left( \frac{I_{it}}{P_{it}} \right) + \varepsilon_{it}$$

Assume that the following specification is in fact estimated.

$$(3) \quad \ln\left(\frac{R_{it}}{Y_{it}}\right) = \beta_0 + \beta_2 \left( \frac{I_{it}}{P_{it}} \right) + \varepsilon_{it}$$

Comparing equation 3 with equation 2 illustrates that the estimated specification suffers from a left-out-variable bias problem. If the demand elasticity ( $\beta_1$ ) is less than one, then the coefficient on the left-out-variable is negative. GQR establish that the likely correlation between the left-out-variable (per capita income) and the immigrant share is positive. This suggests that normalizing rents by income (in this simple example) will create a downward bias on the estimated coefficient on the immigrant share.

GQR also provide a wealth of descriptive information. Figures 2a–2e show by decade the distribution of rent-to-income ratios for the five SMSAs with the highest immigrant share. The figures show no systematic shifts in these rent burden distributions in the period from 1980 to 2000. GQR comment that this simple descriptive check of the data does not reveal any obvious evidence of a significant immigrant impact on rent burdens. They caution readers, though, that these figures cannot control for the many factors that may be affecting rent burdens in these SMSAs.

Let me add another reason for caution in interpreting these figures. The observed empirical rent burden distribution for any SMSA and year

reflects the underlying distribution of rent burdens among all households and the censoring of that distribution by the decisions by households to own versus rent. That is, if a household owns instead of rents in a given year, the researcher does not observe the rent-to-income ratio for that household. If the homeownership rate is roughly unchanged over a period of time, it is likely that changes in the observed distribution of rent burdens reflect changes in the underlying distribution of rent burdens for households. However, in the decade of the 1990s a substantial increase in homeownership rates occurred. This increase makes it difficult to interpret any changes to the observed empirical distribution of rent burdens from 1990 to 2000. Any shifts in the underlying distribution during this period may be masked by changes in the censoring of this information as more households became homeowners.

GQR also explore in figure 4 whether there is a relationship between median SMSA rent burdens and the fraction of the housing stock that is new. They interpret this fraction as a measure of the elasticity of housing supply in the SMSA. For high-income renters there is no relationship, but for low-income renters GQR find that higher proportions of new housing stock are associated with lower rent burdens.

If the primary factors that shift the demand for housing in a local housing market are aggregate in nature, then GQR's interpretation of figure 4 seems reasonable. That is, if most SMSAs experience similar housing demand shocks, then difference in supply responses will reflect underlying differences in housing supply elasticities. However, if there are significant regional patterns to housing demand shocks, then the proportion of new housing across SMSAs could differ even if all SMSAs had similar housing supply elasticities.

The impact of immigration on native households is an important unresolved public policy issue. It is laudable that researchers such as GQR are now looking for immigration impacts in the housing market as well as the labor market. Greulich, Quigley, and Raphael provide a nice contribution to this effort. Empirical work such as this will help point to a unified theoretical framework for understanding the nature of these immigrant impacts.

**Guillermina Jasso:** Erica Greulich, John M. Quigley, and Steven Raphael address two important questions in the study of migration and in the study of housing: First, what are the patterns of housing behavior

among foreign-born persons in the United States and what are the determinants of these patterns? Second, what is the impact of foreign-born housing behavior on the native born? They provide a careful and detailed examination of housing patterns among the foreign born and an equally careful analysis of those patterns and their impact. The data, however, are not equal to the task. As immigration researchers have discussed for almost twenty-five years—and numerous panels in the private and public sectors have concluded—new kinds of data are required in order to provide reliable answers to questions about migration. Understanding the housing behavior of the foreign born, and hence its impact on the native born, requires taking into account the distinctive legal environments faced by different subsets of the foreign born and their differential resources, in a framework attentive to cohort effects and duration effects.

In these comments I discuss conceptual and data challenges and a new longitudinal public-use data resource—the New Immigrant Survey—which will make it possible to answer many questions, especially as time passes and survey rounds accumulate.<sup>36</sup> And I present preliminary evidence on homeownership based on the 1996 and 2003 cohorts of new legal immigrants studied in the New Immigrant Survey.

### *Conceptual and Data Challenges*

There are two major challenges in studying the foreign born. The first is to accurately characterize the environments they face—especially law and policy regimes—so that their behaviors and decisions can be understood and interpreted. The second, arising from the dynamic nature of immigration, is to follow the foreign born over time, so that changes in behavior and characteristics can be mapped and the extent and pace of adjustment to and integration into the United States analyzed.

LEGAL STATUS AND THE ENVIRONMENTS FACED BY THE FOREIGN BORN. Foreign-born persons in the United States are highly heterogeneous. Not only do they come from an extraordinary variety of countries and backgrounds, but, importantly, they face very different U.S. environments, depending on their exact legal status. Housing behavior cannot be understood without understanding the environment faced, and the environment faced cannot be understood without information about legal status. Though anyone, or almost anyone, with sufficient financial resources can

36. [www.pop.upenn.edu/nis](http://www.pop.upenn.edu/nis) (May 2004).

purchase a house in the United States, the desire to purchase a house will probably differ across the following types of foreign born: illegal aliens, legal temporary residents (such as foreign students, World Bank staffers, or newspaper correspondents), lawful permanent residents (LPRs), and those among LPRs who have naturalized. A person who does not have assurances of remaining in the United States—a person, say, subject to deportation—will not want to buy a house.<sup>37</sup>

The large databases currently available (such as the census and the Current Population Surveys) do not provide information on legal status (except for information on naturalization). Thus it is difficult to understand and interpret a person's actions based on these data. Net of every other characteristic— income, region of the country, and so on—legal status may play a determining role in the decision to buy or rent.

Accordingly, the practice in Greulich, Quigley, and Raphael of treating “foreign born” and “immigrant” as synonyms and using the two words interchangeably leads to substantial distortion. For example, they state that “recent immigrants to the United States are, on average, considerably less educated than natives.”<sup>38</sup> But data on legal immigrants admitted to lawful permanent residence in 1996 indicate otherwise, showing instead that recent legal immigrants have average schooling similar to the native born—and substantially higher than the set of all recently arrived foreign born.<sup>39</sup>

**DYNAMIC CHARACTER OF IMMIGRATION.** Assimilation occurs over time. The decision to remain in the United States or to leave, the timing of emigration, the accumulation of resources—all occur over time. Thus an important desideratum of data for immigration research is that the data be longitudinal.

The large databases currently available are cross sectional, and thus it has not been possible to follow individual immigrants over time. The synthetic-cohort method is widely used, but it has serious limitations, as we shall see.

**INTERACTION OF THE TWO CHALLENGES.** The two challenges—of accurately characterizing the environments faced by the foreign born and

37. The acronym LPR will be used for both lawful permanent resident and lawful permanent residence. The context should make clear whether reference is to a person or to a status.

38. The authors cite Borjas (1999).

39. Jasso and others (2000b).

of observing foreign born over time—interact in important ways. For example, it is a universal premise in immigration research, and an empirically documented one, that the returns to experience differ depending on whether the experience is as an illegal alien, or as a legal temporary resident, or as a legal permanent resident (LPR). Moreover, the cohort that is followed over time is most usefully defined in terms of accession to a legal status, in terms, that is, of initiation into a state in which a particular environment is faced uniformly by all members of the cohort. Thus it makes sense to speak of the cohort who became LPRs in 1972 or of the cohort who entered without inspection for the first time in 1992.

There is a still further way in which legal environments play a part. Within the set of LPRs, the specific provision of the law by which LPR was achieved carries with it special features. For example, some immigrants acquire only conditional LPR and must have the conditionality removed two years later. Some require contractually binding affidavits of support. Some have access to public assistance privileges. Only the immigrant class of admission provides this information.

Note also that because requirements differ across visa categories, the immigrant class of admission provides further information about immigrant selection, and thus, potentially, about the resources relevant to housing behavior. For example, a diversity visa requires a high school education (or equivalent). A spouse-of-U.S.-citizen visa, through behavioral mechanisms associated with assortative mating, signals that a U.S. citizen—and Americans are among the most highly educated people in the world—has screened this person for the long term. An employment visa, depending on its particular type, may require a baccalaureate degree.

Finally, note that immigration law and policy are not static. There are many changes, and thus the specific environment and immigrant background signaled by a visa vary with the year in which it is acquired. For example, a spouse-of-U.S.-citizen visa in 2003 provides a different signal than a spouse-of U.S.-citizen visa in 1996, for two reasons: stringent affidavit-of-support provisions are now in effect; and in 1996, persons who had been granted amnesty under the Immigration Reform and Control Act of 1986 (IRCA) were naturalizing and sponsoring their spouses.

**INADEQUACY OF THE SYNTHETIC COHORT METHOD.** Definition of the cohort—of the formative event that initiates cohort members into a special state—is based on the census question on year of entry. For a long time, immigration researchers have expressed concerns about the ques-



tion on year of entry, in part because the question is a subjective one, which can be answered in different ways depending on the respondent's legal status, and which can be answered in different ways even by the same person at different points in the life course, and in part because the wording of the question or its associated instruction has changed over time.<sup>40</sup> To illustrate briefly, in 1980 the question asked foreign-born respondents to provide the first year they came to stay. In 1990 the question asked for the latest year they came to stay, and in 2000, for the year they came to live.

Thus one cannot be sure that the people who in 1990 say they came to stay in 1985–90 are the same people who in 2000 said they came to live in 1985–90. Indeed, people who in 1990 say they came to stay in 1985–90 may also have said in 1980 that they came to stay in 1975–80. For example, they may have thought in 1980 that they came to stay for the first time in 1977, but then they left in 1982, returning in 1988.

Moreover, because of emigration selectivity, it is not possible to gauge how much of what appears to be change in behavior—more people buying a house—may instead be change in the composition of the cohort—with renters leaving the country and buyers remaining.

As numerous immigration researchers and panels have concluded, the synthetic cohort method is a poor substitute for longitudinal observation of probability samples drawn from well-defined cohorts.

MIXED-NATIVITY HOUSEHOLDS. Finally, there is one feature of Greulich, Quigley, and Raphael's empirical implementation that ignores immigration realities and potentially exaggerates differences in homeownership between the native-born and foreign-born populations. The authors classify a household as immigrant or native depending on the nativity of the householder. This means that both the immigrant and native subsets include an unknown proportion of mixed-nativity households. But the mixed-nativity household is very important to study in its own right. Its behavior may differ from that of both pure-native and pure-foreign households. Inclusion in the two sets dilutes the patterns in the two pure sets and may induce differential distortion.

The mixed-nativity household is a critical element in immigration research. Such households are formed by the marriage of a native-born U.S. citizen to a foreign-born person who, typically, is sponsored for

40. Jasso and Rosenzweig (1990); Jasso (2004); Redstone and Massey (forthcoming).

immigration by the U.S. citizen. The spousal route to immigration is a favorite and appealing route. It is the route used by the largest single set of adult immigrants. For example, in the years 1996–2000, the proportion of adult new legal immigrants who obtained a visa as the spouse of a U.S. citizen ranged from 27.2 percent in 1996 to 33.3 percent in 1998.

If there are systematic differences between the U.S. citizen men who marry and sponsor the immigration of wives and the U.S. citizen women who marry and sponsor the immigration of husbands, then inclusion of mixed-nativity households in the foreign-born set and the native-born set introduces differential distortion. For example, if U.S. citizen men and their foreign-born wives have higher schooling than U.S. citizen women and their foreign-born husbands (as suggested by data on the fiscal year 1996 immigrant cohort) and if the census respondents identified as the householder are disproportionately male (for example, 87 percent male in the 2000 Census), then households formed by (the higher-educated) U.S. citizen men and their immigrant wives are included among the native-born households analyzed by Greulich, Quigley, and Raphael, and households formed by (the lower-educated) U.S. citizen women and their immigrant husbands are included among the foreign-born households.<sup>41</sup> Thus the failure to examine separately mixed-nativity households not only misses an opportunity to learn more about the behavior of this important type of household but also exaggerates the differential in homeownership between native-born and foreign-born households.

### *Homeownership and the New Immigrant Survey*

Accurate assessment of the impacts of immigration on native-born housing costs hinges on correct understanding of foreign-born housing patterns. Correct understanding of foreign-born housing patterns in turn requires understanding the decision to buy or rent, taking into account the distinctive legal environments faced by different subsets of the foreign born and their differential resources, in a framework attentive to cohort effects and duration effects. Data recently collected by the New Immigrant Survey (NIS) on the fiscal year 1996 and 2003 cohorts of new legal immigrants provide some initial insights.

OVERVIEW OF THE NEW IMMIGRANT SURVEY. The New Immigrant Survey is a new plan for nationally representative, longitudinal studies of

41. For data on the NIS-P1996 immigrant cohort see Jasso and others (2000a).

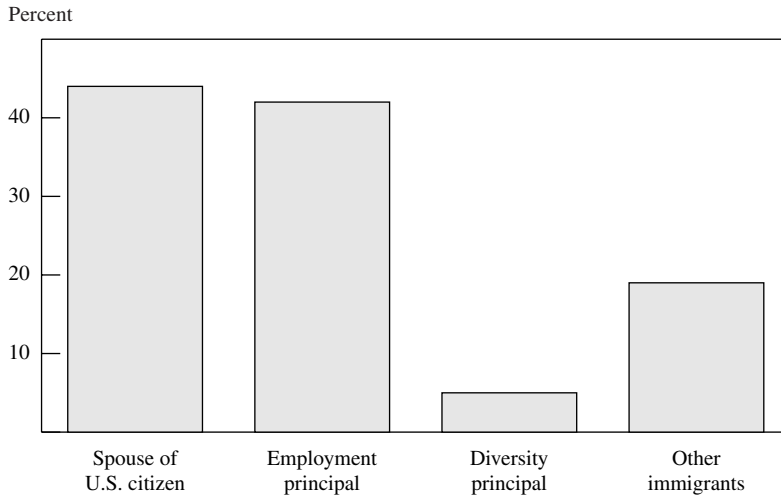
immigrants and their children that will provide new kinds of data to help answer many important questions about immigration; the data will be publicly available to researchers.<sup>42</sup> In preparation for the full New Immigrant Survey, the New Immigrant Survey Pilot carried out a survey of a representative sample of legal immigrants admitted to permanent residence in July and August of 1996 (148,987 persons). The sample design oversampled employment-based immigrants, in whom there is considerable interest, and undersampled child immigrants, who are numerous. The final sample numbered 1,984 persons, of whom 1,839 were adult immigrants. The first full NIS cohort consists of approximately 11,000 new legal immigrants drawn from among new immigrants in the seven-month period May–November 2003. Of these, approximately 10,000 are adult immigrant and 1,000 are child immigrant principals. The sample design oversampled employment and diversity principals and undersampled the numerous spouse-of-U.S.-citizen category. Interviews were conducted with the adult immigrants, with the parents of the child immigrants, and with the spouses of both sets of adults; as well, up to two children, 8–12 years old, were interviewed, and all children, 3–13 years old, were administered tests of achievement.

HOMEOWNERSHIP IN THE NEW IMMIGRANT SURVEY. The NIS-Pilot (NIS-P) included the question, “Right now, do you own any property in the United States? (By property we mean any commercial or residential property you currently own including your home and any business you own.)” This question was asked at the twelve-month round; the average time since admission to LPR was between twenty-two and twenty-three months. The NIS-2003 baseline-round questionnaire included the question, “Do you [and your spouse, etc.] own this [home or apartment], rent it, or what?” Here we use data from the May, June, and July subsamples. The average time since admission to LPR is 2.75 months. Thus the housing information provided by the NIS-2003 cohort May–July subsample pertains to a much earlier point in the immigrant career than the housing information provided by the NIS-P sample.

Examination of the data yields information about visa effects, duration effects, and cohort effects.

42. A succinct overview of the New Immigrant Survey may be found in Jasso and others (2003).

**Figure 10. Homeownership, New Legal Immigrants, 25–64 Years Old, by Visa Class: NIS 2003 Cohort**

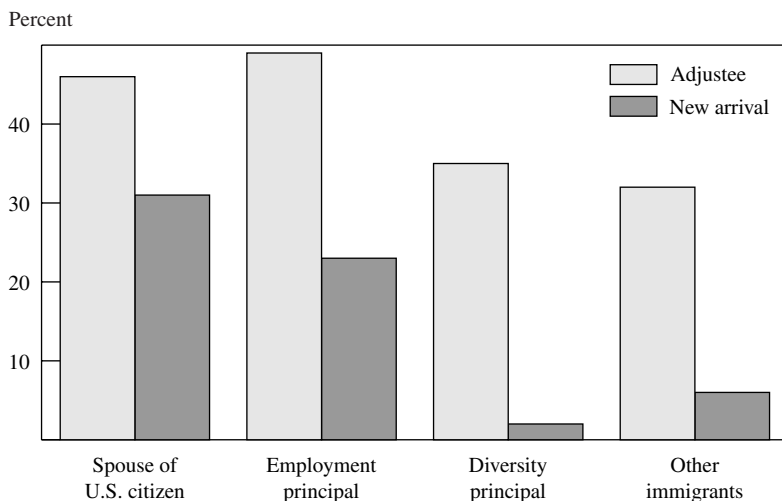


Source: New Immigrant Survey, 2003 immigrant cohort. See text.

Figure 10 shows the proportion of the NIS-2003 immigrants, 25–64 years old at admission to lawful permanent residence, who own their home. Three classes of admission are depicted—spouses of U.S. citizens, employment principals, and diversity principals, as well as a fourth category containing all other immigrants. As shown, 44 percent of the spouses of U.S. citizens and 42 percent of the employment principals own their own home (at less than three months after admission to LPR, on average). The comparable proportions are 20 percent in the other-immigrants category and only 5 percent among diversity principals. Clearly, immigrants screened by an employer or a U.S. citizen spouse have (or acquire) both the resources and the resolve to participate in the “American dream” and to do so almost immediately.

Of course, some immigrants “adjust” their status to LPR after living in the United States with a temporary nonimmigrant visa, such as an F visa for foreign students or an H-1B visa for specialty workers, and so on. If both the requisite resources and the resolve to buy a home increase with time in the United States, adjustee immigrants would have higher rates of homeownership than new-arrival immigrants. Figure 11 reports the pro-

**Figure 11. Homeownership, New Legal Immigrants, 25–64 Years Old, by Visa Class and Adjustment of Status: NIS 2003 Cohort**



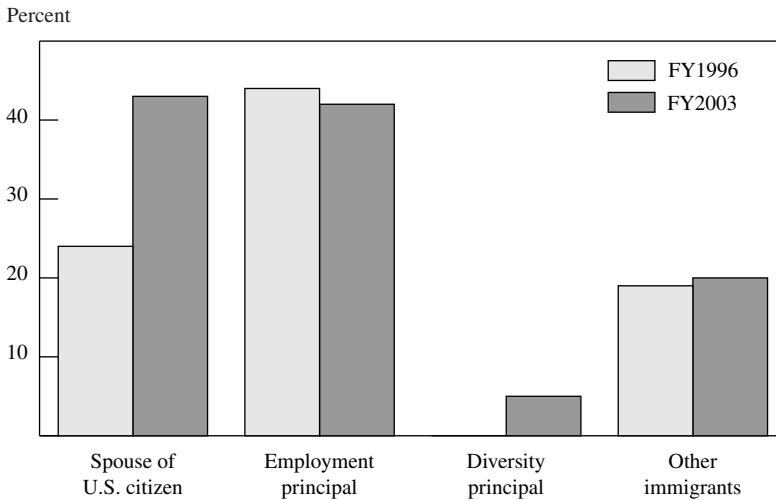
Source: New Immigrant Survey, 2003 immigrant cohort.

portions who own their home, separately for adjustee immigrants and new-arrival immigrants.<sup>43</sup> As shown, there are large duration effects. The proportions who own their home are more than twice as large for adjustee immigrants, compared with new-arrival immigrants, in three of the four admission classes—all except the spouses of U.S. citizens, a visa category in which the sponsor may have already owned a home before marrying and sponsoring the spouse.

It is reasonable to expect nontrivial cohort effects. First, the fiscal year 2003 immigrants are subject to the stringent affidavit-of-support provisions instituted by the Illegal Immigration Reform and Immigrant Responsibility Act of 1996, which went into effect in December of 1997. We thus expect the NIS-2003 immigrants to have more resources than the NIS-P immigrants. Second, the NIS-P immigrants are thought to include an IRCA-aftermath stream consisting of spouses of newly naturalized amnestied aliens. For this reason, the NIS-2003 immigrants may also be thought to have more resources than the NIS-P immigrants.

43. The contrast is not exact, as some new-arrival immigrants have in fact been living in the United States but are ineligible to adjust status, for example, because they are currently deportable.

**Figure 12: Homeownership, New Legal Immigrants, 25–64 Years Old, by Visa Class: NIS 1996 and 2003 Cohorts**



Source: New Immigrant Survey, 1996 and 2003 immigrant cohorts.

Third, the NIS-2003 immigrants include a higher proportion of immigrants who adjusted their status than the NIS-P immigrants (approximately 60 percent in the NIS-2003 compared with 55 percent in the NIS-P). Longer time in the United States is also associated with greater resources. Counterbalancing these three factors, which all favor higher homeownership in the NIS-2003 than in the NIS-P, is that the NIS-2003 immigrants are interviewed twenty to twenty-one months earlier in the immigrant career than the NIS-P immigrants. Which factors dominate is an empirical question.

Figure 12 depicts the proportions reporting ownership of property (1996) or a home (2003). As shown, the proportions who own property or a home are roughly similar in the employment and residual categories, but they are substantially different in the spouse-of-U.S.-citizen category, with higher homeownership rates in the 2003 cohort. Given that the 2003 information was obtained twenty to twenty-one months earlier in the immigrant career than the 1996 information, these results also suggest higher homeownership rates among employment and diversity principals in the more recent cohort. Among the spouses of U.S. citizens, the differential is striking, suggesting a pronounced cohort effect plausibly associ-

**Table 9. Logit Estimates of Determinants of Owning Property or Home in the United States, New Legal Immigrants, 25–64 Years Old**

	<i>1996 cohort own property</i>	<i>2003 cohort own home</i>
Age	.218 (2.74)	.222 (4.38)
Age squared	-.00267 (2.70)	-.00252 (4.23)
Sex (1 = female)	.0670 (.38)	.127 (1.03)
Total schooling (years)	.0541 (2.84)	.0405 (3.04)
Adjustee	.731 (3.51)	1.68 (11.2)
Spouse of U.S. citizen	-.0962 (.42)	.865 (5.39)
Employment principal	.482 (2.18)	.706 (4.26)
Diversity principal		-.759 (2.45)
Constant	-6.53 (4.17)	-7.64 (7.0)
N	750	1,909

*Source:* Data are drawn from the New Immigrant Survey, 1996 and 2003 immigrant cohorts. Data for the 2003 cohort are drawn from the subsamples for May, June, and July. Absolute values of asymptotic *t* ratios appear in parentheses next to the corresponding estimates.

ated with the IRCA-aftermath stream consisting of spouses of newly naturalized amnestied persons.

To assess the net effects of cohort, duration, and class of admission, I carry out a binary logit analysis of the probability of owning property (in the 1996 cohort) and a home (in the 2003 cohort). Table 9 reports the estimates. The admission category variables are jointly significant at high levels of significance, indicating the persistence of visa effects in a multivariate context. In 2003, net of duration effects and other variables, visa effects mirror the percentages in figures 10 and 12. Spouses of U.S. citizens have the highest probability of owning a home, followed closely by employment principals. In 1996, however, spouses of U.S. citizens rank lower than the other admission categories in the probability of owning property, a result that departs from that in the raw percentages depicted in figure 12.

The adjustment-of-status variable is statistically significant in both cohorts, underscoring the importance of the duration effects visible in

figure 11. The coefficient is larger in the 2003 cohort, suggesting that the more recent set of adjustees was more successful in converting time in the United States into a home. This may be due in part to the fact that, under provisions in effect in 1996, the earlier immigrants could adjust from an illegal status while in the United States. To the extent that illegal migrants have fewer resources than their counterparts who are adjusting from a legal status, the estimated duration effects would reflect the differing composition of the adjustees in ownership-relevant characteristics.

Finally, schooling and age are significant in both cohorts. Schooling exerts, as expected, a positive effect on the probability of ownership. The effects of age are represented by downward parabolas, peaking at forty-one years of age (1996) and forty-four years of age (2003).

**SUMMARY.** The heterogeneity of the foreign born and the dynamic nature of their attachments to the United States—visible in the visa, duration, and cohort effects documented among new legal immigrants—means that correct understanding of the housing behavior of the foreign born requires attentiveness to these aspects of their personal and social circumstances. And correct understanding of the housing behavior of the foreign born is in turn necessary for correct assessment of its impact on the native born. Change in the composition of the foreign-born population will importantly affect the type and magnitude of its housing impacts.



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