Patterns of Residential Crowding among Hispanics in Later Life: Immigration, Assimilation, and Housing Market Factors

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Objective. We describe patterns of residential crowding among older Hispanics and non-Hispanic Whites. We also examine hypotheses about the relationship of residential crowding with assimilation (language and duration of residence) and housing market characteristics.

Methods. We employ a multilevel research design, using data from the 2000 U.S. Census of Population. Hierarchical linear models are utilized to estimate the association between residential crowding and both individual and housing market factors.

Results. Approximately one third of older Hispanics in metropolitan areas live in crowded housing compared with only one tenth of older non-Hispanic Whites. Foreign-born older persons report higher levels of crowding than U.S.-born older persons. Residential crowding differences between older Hispanics and non-Hispanics are not eliminated after controls are included. Older Hispanics who report better English language skills and a longer duration of residence in the United States live in less crowded housing. We do not find evidence for a relationship between crowding and residential segregation, but we find consistent evidence for an association between residential crowding and relative size of the Hispanic population.

Discussion. The forces that shape household composition and access to housing among older Hispanics appear to result in higher levels of residential crowding for this population.

Key Words: Diversity in aging—Housing—Minority aging (race/ethnicity)—Multilevel models—Residential crowding.

MUCH of the scientific literature regarding housing quality at the later stages of the life course focuses on the fit between the built environment and ability to navigate that environment when functional status is compromised (Golant, 1998; Huttman & Gurewitsch, 1988; Lawton, 1982). Yet, there are other forms of housing quality that warrant our attention. Included among these are levels of residential crowding, which may be related to safety, health, quality of life, and general well-being (Evans, Kantrowitz, &, Eshelman, 2002). Residential crowding is also linked to the establishment and maintenance of housing standards, including building and health codes (Golant & LaGreca, 1994).

Research using animal models as well as experimental and observational studies of humans has attempted to determine whether crowding yields pathological behavior and poor quality of life (e.g., Edwards, Fuller, Vorakitphokatorn, & Sermsri, 1994). The current study does not focus on the consequences of crowding, but rather, we analyze the factors associated with the prevalence of residential crowding among older Hispanic persons. Residential crowding is related to spatial density, which may be evaluated at the population level as the number of persons per square mile for a geographic unit (e.g., county or metropolitan area) or at the household level as the number of persons per room in a housing unit (Galle, Gove, & McPherson, 1972). We focus on the most common conceptualization, persons per room.

We know relatively little about residential crowding among the older population. This may be due to a perception that, on average, many older people have more housing space than they need for a comfortable living, at least compared with younger families with children. Spatial density at the housing level may decrease over the life course due to changes in household size that results from children leaving home as well as from widowhood. Much of our understanding of residential crowding is based on a middle class majority White population perspective, which may not be representative of the burgeoning older race and ethnic populations (Torres-Gil & Moga, 2001). Minority groups, especially those with significant immigrant populations, may not experience an abundance of space; to the contrary, they often live in crowded conditions (Krivo, 1995; Myers & Lee, 1996). In the United States, the largest immigrant group is Hispanic, with an estimated population of 45 million persons, of which 40% are foreign born (Pew Hispanic Center, 2009). Approximately 2.7 million Hispanics are aged 65 years or older (U.S. Census Bureau, 2009b). With a

rapidly aging population among all race and ethnic groups in the United States and with continued high rates of immigration, especially from Latin America, gerontologists and policy makers need to learn more about housing quality among Hispanics in later life.

The objectives of this study are threefold: (a) to describe residential crowding patterns among older Hispanics and compare these with their non-Hispanic White counterparts; (b) to evaluate whether the prevalence of residential crowding in later life is associated with a set of individual characteristics, including immigrant status, and housing market characteristics; and (c) to evaluate whether Hispanic and non-Hispanic White residential crowding differences disappear after controlling for the factors noted earlier. To accomplish these objectives, we employ data from the 2000 Census of Population and Housing.

Background

Residential crowding is considered a marker of housing inequality and has not been adequately studied among older persons across ethnic groups in the United States, despite the centrality of housing to the American stratification system (e.g., Conley, 2001; Pearce, 1988). Krivo (1995, p. 599) argues that "Housing is an important source of social and economic well being. Physical and psychological health, privacy, social status, and current and long-term financial security accrue from living in higher quality and *less crowded housing*" (emphasis added). To the extent that some groups have restricted access to the benefits of quality housing, housing inequality is present.

Residential crowding in the United States declined during the first 80 years of the 20th century but increased during the last few decades (Clark, Deurloo, & Dieleman, 2000; Myers & Lee, 1996). Much of this increase in crowding is tied to increases in immigration (Myers & Lee, 1996). Research shows that immigrants in preretirement age groups are more likely than nonimmigrants to live in crowded housing (Schill, Friedman, & Rosenbaum, 1998). It is likely that immigrants pragmatically combine households with members of their social network as a temporary solution to help adjust to a new social, economic, and cultural environment (Krivo, 1995). Using 1990 U.S. Census data, Myers, Baer, and Choi (1996) show that more than one third of immigrant householders who arrived during the 1980s lived in crowded housing conditions. Once members of these groups obtain the economic wherewithal to purchase better housing, typically through increased education, better occupations, and higher wages and salaries, economic theory suggests that nativity differences in residential crowding should disappear.

In addition to immigration status, a number of other individual and housing market factors may be associated with residential crowding among Hispanics in later life. One individual-level factor of specific interest in this study is the degree of assimilation into the non-Hispanic White culture. At the housing market level, we are also interested in learning whether ethnic group clustering and housing market affordability and availability are related to the ability to obtain housing with low levels of spatial density. We discuss these factors below.

The process of assimilation into the culture of the host country may be an indirect indicator of changing preferences for residential crowding. Initially, immigrants may prefer housing densities similar to those found in their home countries—in essence, they bring cultural patterns, norms, and values regarding housing density to the host country when they immigrate. An assimilation perspective predicts that immigrant elderly persons who are more assimilated will be more likely to live in residences with housing densities similar to that of the White majority population and to their U.S.-born coethnic counterparts (Gordon 1964). In fact, research shows that assimilation among immigrants is related to increases in both homeownership rates and reductions in levels of residential crowding (Rosenbaum & Friedman, 2004).

Assimilation may occur over time within a single generation of immigrants, and it may also occur across generations as exposure to the mainstream culture increases. Research shows that as immigrants acquire stronger English language skills and as their duration of residence increases, their household composition begins to resemble that of nonimmigrants (i.e., less complex households; Burr & Mutchler, 2003), which may in turn result in fewer household members per unit of space. Research also shows that first generation minority members (1.0 generation) who live in New York City are more likely to live in crowded housing than persons in the 1.5 and higher generations (Rosenbaum & Friedman, 2004).

Furthermore, older immigrants and their nonimmigrant counterparts often live in areas with high proportions of coethnic group members. Research shows that Hispanics of all age groups, especially the foreign born, tend to cluster in subareas of gateway cities but that overtime, this group is dispersing across smaller towns and communities across the United States (Frey, Berube, Singer, & Wilson, 2009). On the one hand, older immigrants and U.S.-born coethnic group members may choose to live in these urban areas in part because they are more comfortable living in communities where their culture is valued and protected and where they find assistance with meeting everyday needs.

On the other hand, Hispanics, like other minority groups, are concentrated in specific neighborhoods within urban areas due to forces beyond their control. One such force is housing discrimination. Studies show that Hispanics are discriminated against in the housing market (Krivo, 1995) and that housing discrimination is one reason they do not have the same quality of housing as non-Hispanic Whites (Flippen, 2001). Housing options available to Hispanics, including immigrants, may be limited due to a desire by the

majority population to live among members of their own ethnic and race group (a form of place stratification). When Whites are able to promote residential segregation (an indirect measure of housing discrimination) between themselves and Hispanics, Hispanics will be more likely to live in neighborhoods with poorer and smaller housing stock (Rosenbaum & Friedman, 2004). Studies suggest that living in residentially segregated housing markets should lead to more crowded housing among Hispanics (Schill et al., 1998).

Whether older Hispanics choose to live in urban areas with high concentrations of coethnic group members or whether they are unable to find quality housing in neighborhoods within these urban areas, the relationship with respect to residential crowding may be the same. Persons who live in these ethnically concentrated areas and who are residentially isolated from non-Hispanic Whites may be slower to assimilate to the values of residential density held by the majority population. The pace of assimilation may be slower because they are slower to adopt the English language and are not exposed to some of the other cultural forces that promote assimilation (e.g., sustained contact with the majority population). Thus, persons living in areas with high concentrations of coethnic members may not adhere to cultural norms of low residential density, even if they are able to afford less crowded housing.

Although research has not shown conclusively what factors are associated with residential crowding, crowding is considered to occur more frequently in communities where adverse economic and social conditions are more prevalent (e.g., Friedman & Rosenbaum, 2004; Myers & Lee, 1996). For example, Myers and colleagues found that local housing market characteristics influence residential crowding. They find that expensive housing, especially high rental costs, and low housing vacancy rates are related to higher rates of spatial density within housing units (Myers et al., 1996).

Finally, research consistently shows that crowding is more common among renters than among homeowners (Krivo, 1995; Myers et al., 1996; Rosenbaum & Friedman, 2004; Schill et al., 1998). This is probably due to the fact that rental housing tends to be smaller. Minority populations, including Hispanics, have a lower rate of homeownership than the White majority population (Kochhar, Gonzalez-Barrera, & Dockterman, 2009), likely explaining some of the minority–majority crowding difference.

Research Hypotheses

We address whether residential crowding among older Hispanics is related to levels of assimilation as well as to housing market characteristics, such as coethnic concentration, neighborhood distribution relative to the non-Hispanic White population, and housing availability and affordability. We offer the following hypotheses regarding residential crowding in later life among Hispanic older persons: (a) older Hispanics who are less assimilated (operationalized as

having poorer English language skills and shorter duration of residence in the United States) will live in more crowded housing than their peers who are more assimilated; (b) older Hispanics who live in housing markets with relatively more coethnic members (operationalized as relative size of the Hispanic population) and who live in housing markets with higher levels of geographic separation from the non-Hispanic population (operationalized with residential segregation) will live in more crowded housing than those who live in housing markets with relatively few coethnic members and who live in housing markets with lower levels of geographic separation from the non-Hispanic population; and; (c) older Hispanics who live in less affordable housing markets (operationalized with rental costs) and housing markets with less available housing (operationalized with rental vacancies) will live in more crowded housing than their counterparts who live in less expensive rental housing markets and housing markets with more viable rental options.

Methods

Sample

We employ a multilevel research design with individual-level data taken from the 2000 U.S. Census of Population (5% Public-Use Microdata Samples [PUMS]). The U.S. Census contains sufficient sample sizes and the necessary variables to conduct this study. Housing markets are approximated by metropolitan statistical areas (MSA), following the precedent established by many federal, state, and local government agencies, by the real estate industry, and by housing researchers. MSAs are composed of a central county with a large urban population, and they often include surrounding counties that have strong social and economic ties, typically identified through commuting patterns. Many variables necessary for this study are provided at this level of geographic detail. One limitation of using MSAs as housing markets is that some areas are very large in terms of population size and geography and likely have embedded in them multiple smaller housing markets. Data on MSA housing and population characteristics are also taken from the 2000 U.S. Census (Summary Files 3), including estimates of residential segregation between non-Hispanics and Hispanics (U.S. Bureau of the Census, 2009a).

We include Hispanics and non-Hispanic Whites who are aged 65 years and older and who lived in MSAs. Persons living in group quarters are excluded. We include Hispanics who identify themselves as Mexican, Puerto Rican, Cuban, Central American, or South American. We do not include persons who identified themselves as Hispanic but who did not identify a specific group. We also do not include non-Hispanic African Americans, Asians, or other race groups due to their different immigration histories and cultural characteristics. The Hispanic sample size contains 59,732 persons. We generate a random sample of non-Hispanic Whites to approximate the size of the Mexican American

sample, which is the largest segment of the elder Hispanic population. The non-Hispanic White sample contains 35,122 persons. In the PUMS data, geographic information for small MSAs is suppressed to protect confidentiality; this leaves a maximum sample of 297 MSAs for analysis (thus, 34 MSAs from the 331 identified in 2000 were not included in our study). Statistics for individual variables are generated with centered person weights.

Variables

We create an objective measure of residential crowding for our dependent variable. The U.S. Census does not contain information that would allow us to estimate subjective measures of crowding (see Gove, Hughes, & Galle, 1979; Nagar & Paulus, 1997 for discussions of subjective measures of crowding). Residential crowding is defined as the number of persons per room, not including bathrooms, kitchens, hallways, and porches (the range for our sample is 0.1 to 12 persons per room). Government agencies and many researchers consider a home to be crowded if it contains more than 1.0 person per room and to be severely crowded, or overcrowded, if the housing unit contains 1.5 or more persons per room (Blake, Kellerson, & Simic, 2007; Myers et al., 1996). In our study sample, the mean persons per room for non-Hispanic Whites is 0.37 (SD = 0.22) and the mean for Hispanics is 0.81 (SD = 0.70; group differences are statistically significant). We also estimate models with residential crowding defined by standard cut-points (<1.0 persons per room, 1.0–1.49 persons per room, and ≥1.5 persons per room) to compare regression results across the continuous and categorical-dependent variables.

We include dichotomous variables indicating ethnic identity for each of the five Hispanic groups (non-Hispanic Whites are the reference group). We include a dichotomous variable for immigrant status based on place of birth. Individuals born outside the United States, but not in one of its territories and not born abroad to U.S. citizen parents, are coded as being an immigrant. Although Puerto Ricans who are born in Puerto Rico are U.S. citizens and are not technically "foreign born," we expect that Island-born Puerto Rican's housing experiences are similar to that of immigrants. The Island of Puerto Rico has its own unique customs, social norms, and other cultural features. Thus, we define Puerto Ricans born in Puerto Rico as "immigrants" and Puerto Ricans born in U.S. states as nonimmigrants. Furthermore, Puerto Ricans are the second largest Hispanic group in the United States, and they are often considered to be a minority group. Their access to housing may be affected by the same factors that affect other Hispanic groups (discrimination, living in area with high proportions of co ethnic group members), and thus, it is informative to include this group. Results for this group should be interpreted with caution.

We include two measures to test our hypotheses about the relationship between assimilation and residential crowding. English language ability is measured as 1 = *speaks English only, well, or very well* and 0 = *English-speaking ability is fair or poor*. We also include duration of residence for immigrants with four dichotomous variables (immigrated between 1990 and 2000, 1980 and 1989, 1970 and 1979, or 1969 or earlier).

We measure economic status with total personal income in 1999 (logged), and we measure wealth indirectly with interest and dividend income in 1999 (logged). We also measure education with a dichotomous variable defined as having completed 12 or more years of education versus less than 12 years. We control for family relationships and household composition. Marital status equals 1 if married with spouse living in the same household and 0 for all other statuses. Dichotomous measures for whether there are children under the age of 18 years in the household and whether there are extended family members or nonrelatives in the household are also included. We include these measures because household composition differences by group may be associated with size of household and thus residential crowding.

We include variables for three housing tenure statuses. For respondents who are the householder or spouse of householder, we create two dichotomous variables identifying whether the home is owned (reference group) or rented. If the respondent is neither the householder nor the spouse of the householder, then we create a variable identifying her or him as a coresident (neither the owner nor the renter). We provide an indicator for presence of a self-care limitation (1 = *yes*), with the assumption that a person with a disability may be more inclined to live with others and that this decision may expose them to more crowded housing conditions. Also included is a dummy variable for gender (1 = *female*) and a variable for age in years (range = 65–93 years). Finally, age squared is introduced to capture the curvilinear trend in residential crowding (crowding increases with age until late in life when it begins to level off).

To test our hypotheses about the relationship of residential crowding with living in residentially segregated housing markets, we include the index of dissimilarity, which captures degrees of residential segregation by neighborhood within MSAs (Massey & Denton, 1988). This indirect measure of housing discrimination (see Flippen, 2001) describes the number of Hispanic (or non-Hispanic) persons that would need to move within a MSA to make the geographic distribution of the ethnic groups even (ranges from 0 to 1, with larger values equaling greater segregation). To capture the impact of living in a housing market with a large number of coethnic group members, we include the percent of the MSA population that is Hispanic. In addition, two housing market variables capturing availability and affordability are included. Housing costs are estimated by the median gross rent (includes rent and utility costs). We also include a

Table 1. Characteristics of Non-Hispanic Whites and Hispanics Aged 65 Years and Older, 2000 (percentages unless otherwise noted)

	Non-Hispanic White sample	Hispanic sample
Individual variables		
Age in years (*M/SD*)	75.0 (7.0)	73.5 (6.8)
Female	57.8	58.8[b]
Married	55.5	46.2
Child less than 18 years old in household	3.9	24.0
Lives with other relatives or nonrelatives	3.3	7.1
Self-care limitation	8.3	11.6
Tenure		
Lives in owned home	76.7	46.5
Lives in rented home	14.6	25.6
Lives as coresident	8.7	27.9
Foreign born	7.3	68.3
Hispanic origin		
Mexican		54.2
Puerto Rican		14.3
Cuban		18.2
Central American		7.2
South American		6.1
Personal income (*M/SD*)	$28,637 (40,159)	$14,021 (24,135)
Investment income (*M/SD*)	$7,166 (22,380)	$1,365 (9,290)
High school education or more	73.7	30.5
Speaks English only/very well/well	96.7	37.8
Immigration year (foreign-born sample only):		
1990–2000	9.0	12.4
1980–1989	5.1	12.4
1970–1979	6.8	15.4
1969 or earlier	79.0	59.8
No. of cases[a]	35,122	59,732

[a] Statistics based on weighted data and sample sizes based on unweighted data.

[b] Group difference not statistically significant.

measure of housing availability (vacancy rate for rental housing). We focus on rental unit availability and affordability because immigrants are more likely to rent than to own and because rental housing tends to be smaller in terms of number of rooms.

We estimated variance inflation factors (VIF) and tolerance levels for all of our predictors to determine if there may be problems with multicollinearity. Multicollinearity may bias estimates of regression coefficients. For all our variables, the VIF's were less than 2.0 and tolerance levels were 0.5 or greater, within the usual thresholds for the identification of multicollinearity problems.

Analytic Approach

Our analysis unfolds in several stages. First, we describe the sample based on our independent variables. Second, we report rates of residential crowding for each ethnic and immigrant status group by categories of number of persons per room (less than 1.0, 1.0–1.49, and 1.5 or greater). Third, we report crowding rates based on these same categories by housing tenure status for older Hispanic and non-Hispanic White persons.

Fourth, we estimate hierarchical linear models with random intercepts using ordinary least squares regression techniques to investigate models of residential crowding (software HLM 6.04; Raudenbush & Bryk, 2002). We use this approach because individuals (Level 1) are nested within housing markets (Level 2). The employment of multilevel models allows us (a) to test for intercept and slope heterogeneity across metropolitan areas, (b) to avoid violating the assumption of homogeneous error variance, and (c) to take advantage of unbalanced data (different numbers of Level 1 units within the Level 2 units). One of the innovations of this study is that we employ these more appropriate statistical techniques not often realized in studies of residential crowding. The results from the random intercepts portion of the model indicate that the average level of crowding varies across MSAs and that there are unobserved factors that contribute to that variability (results available upon request). We report only the fixed effects portion of the regression results in tables 5 and 6. We begin by regressing the crowding variable (persons per room) on the variables for Hispanic group identity for the full sample, followed by the hierarchical inclusion of the remaining sets of theoretical and control variables. Finally, to examine our hypotheses, we present results from separate regression analyses for each Hispanic group sample, comparing these results with those for non-Hispanic White elders.

RESULTS

Table 1 presents a descriptive profile of Hispanic and non-Hispanic White (hereafter, White) persons aged 65 years and older living in our sample of housing markets. Compared with Whites, the sample of Hispanics is younger and has a higher percentage of unmarried persons. Nearly a quarter of Hispanics live with one or more minor children, whereas less than 4% of Whites live with a minor child (these may or may not be the respondent's own children). Twice as many Hispanics as Whites live with an extended family member or a nonrelative. Less than half of all the elderly Hispanics live in an owned home, whereas more than three quarters of Whites live in an owned home. Approximately 7% of elderly Whites are immigrants, while two thirds of elderly Hispanics are immigrants. Whites have, on average, far more economic resources and are better educated than Hispanics. Whites nearly universally (96.7%) report strong command of the English language, whereas only a minority of Hispanics (37.8%) report the same level of English ability. Among the foreign-born sample, approximately 20% of elderly Whites arrived after 1970 and nearly 40% of elderly Hispanics arrived after this time point.

The characteristics of the housing markets are provided in Table 2. The mean Hispanic population size is 10.5%, and the mean index of dissimilarity is 0.39 (on average, nearly 40% of the population in these MSAs would need to change residential location to bring about an even distribution of

Table 2. Characteristics for Non-Hispanic Whites and Hispanics Aged 65 Years and Older, 2000

Metropolitan statistical areas variables	Full sample
Hispanic population (%)	10.5 (14.7)
Index of dissimilarity (M/SDS)	.39 (.12)
Rental vacancy rate (%)	2.5 (1.0)
Median gross rent ($)	572 (121)
No. of cases	297

Hispanics and non-Hispanics). The mean rental vacancy rate is 2.5%, and the mean median gross rent is $572.

In Table 3, we report residential crowding rates for the total Hispanic and White samples as well as for each of the five specific Hispanic-origin groups. Elderly Whites generally live in homes with lower spatial density. However, 1 in 10 foreign-born Whites live in crowded households, although most of these are in the low end of the crowding continuum (between 1.0 and 1.49 persons per room). Hispanic elders exhibit considerable residential crowding; nearly one in three live in a crowded situation. As expected, foreign-born elderly Hispanics are heavily represented in crowded households, with 15.8% living in severely crowded households (1.5 or more persons per room). Among older Hispanics, Puerto Ricans have the lowest rate of crowded housing, whereas Central Americans have the highest rate. Approximately one in two elderly Central Americans live in a crowded household and more than one in five live in a severely crowded household. Foreign-born Mexican American

Table 3. Residential Crowding Rates (%) by Ethnicity and Nativity

	Persons per room			Total[a]	No. of cases
Ethnicity/nativity	<1.0	1.0–1.49	≥1.5		
Non-Hispanic White	96.8	2.7	.5	100.0	35,122
Foreign born	89.0	8.2	2.7	100.0	2,481
U.S. born	97.4	2.3	.3	100.0	32,641
Hispanic	68.5	19.0	12.5	100.0	59,732
Foreign born	62.3	21.9	15.8	100.0	40,580
U.S. born	81.7	12.7	5.5	99.9	19,152
Mexican	68.9	17.4	13.7	100.0	33,125
Foreign born	53.9	22.8	23.3	100.0	15,481
U.S. born	81.9	12.6	5.4	99.9	17,644
Puerto Rican	79.4	15.7	4.8	99.9	7,988
Born in Puerto Rico[b]	79.0	16.0	5.0	100.0	7,163
Born U.S. mainland	84.5	11.9	3.6	100.0	825
Cuban	66.7	22.4	10.9	100.0	10,983
Foreign born	66.2	22.7	11.1	100.0	10,608
U.S. born	80.0	14.3	5.7	100.0	375
Central American	51.0	26.8	22.2	100.0	4,135
Foreign born	50.1	27.2	22.6	99.9	3,964
U.S. born	64.7	17.6	17.6	99.9	171
South American	65.0	21.9	13.1	100.0	3,501
Foreign born	64.4	22.2	13.4	100.0	3,364
U.S. born	76.9	15.4	7.7	100.0	137
No. of cases[c]	74,734	13,789	6,331		94,854

[a] Sums may be different from 100.0% due to rounding error.
[b] Persons born in Puerto Rico are U.S. citizens but are treated here as immigrants (see text).
[c] Statistics based on weighted data and sample sizes based on unweighted data.

Table 4. Residential Crowding by Housing Tenure for Non-Hispanic Whites and Hispanics Aged 65 Years and Older, 2000

	Persons per room			
Ethnicity and housing tenure	<1.0	1.0–1.49	≥1.5	Total
Non-Hispanic White (%)				
Owned home	99.0	.9	.1	100.0
Rented home	89.2	9.7	1.1	100.0
Coresident	90.9	6.5	2.6	100.0
No. of cases	34,055	923	144	35,122
Hispanic (%)				
Owned home	83.1	12.0	4.9	100.0
Rented home	64.2	24.1	11.7	100.0
Coresident	47.9	26.1	26.0	100.0
No. of cases[a]	40,679	11,450	7,603	59,732

[a] Statistics based on weighted data and sample sizes based on unweighted data.

elders are also highly represented in crowded households, with nearly one in four living in a severely crowded residence.

Because research consistently points to housing tenure status as a major indicator of residential crowding, we provide in Table 4 statistics that show how housing tenure is related to crowding. As the literature suggests, older Hispanics and older non-Hispanic Whites who live in a rented home report living in more crowded conditions than those living in an owned home. Among older Hispanics, coresidents (persons who are neither the home owner or the renter) report the highest levels of residential crowding.

The results of the first stage of our regression analyses are presented in Table 5 (full sample, fixed effects only are reported). Model 1 includes the variables for Hispanic group identity. Consistent with Table 3, each elderly Hispanic group lives in a more crowded residence than elderly Whites. Next, we add demographic, self-care limitation, family composition, and tenure status characteristics (Model 2). The magnitudes of the fixed effect regression coefficients for ethnic group identity are lower, but the direction and significance of the coefficients remain unchanged. The direction of the relationships for most other variables is consistent with what we expect—married persons, persons with children in the household, and persons living with nonkin or extended kin live in more crowded housing. Women report more crowding living than men, perhaps because a higher percentage of women live alone in later life.

In Model 3, foreign-born status is added. Residential crowding is higher for foreign-born persons, even after controlling for demographic and other individual characteristics. The relationships of Hispanic ethnic group statuses with residential crowding remain positive and statistically significant, although the size of the regression coefficients is reduced for all groups. We step in the education and income variables in Model 4. The number of persons per room is lower for persons with a high school education and

Table 5. Multilevel Regression Results for Residential Crowding Among Hispanics and Non-Hispanic Whites Aged 65 Years and Older

(Fixed effects only)	Model 1 b	Model 1 SE	Model 2 b	Model 2 SE	Model 3 b	Model 3 SE	Model 4 b	Model 4 SE	Model 5 b	Model 5 SE	Model 6 b	Model 6 SE
Individual variables												
Intercept	.359**	.002	.216**	.004	.215**	.004	.260**	.004	.310**	.009	.313**	.008
Mexican	.451**	.038	.308**	.027	.277**	.025	.251**	.024	.222**	.024	.221**	.024
Puerto Rican	.212**	.014	.115**	.010	.050**	.013	.034[a]	.014	.036*	.013	.036*	.013
Cuban	.275**	.032	.184**	.028	.114**	.028	.102**	.026	.072**	.022	.072**	.022
Central American	.634**	.048	.407**	.034	.340**	.029	.316**	.027	.225**	.028	.224**	.028
South American	.405**	.019	.242**	.016	.172**	.022	.156**	.022	.077*	.029	.077*	.029
Age (years)			−.002	.004	−.001	.004	−.002	.004	−.002	.003	−.002	.003
Age squared			.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Female			−.009**	.003	−.009**	.003	−.020**	.003	−.017**	.003	−.017**	.003
Married			.146**	.003	.145**	.003	.139**	.003	.137**	.003	.137**	.003
Self-care limitation			.045**	.006	.045**	.005	.394**	.005	.036**	.006	.036**	.006
Minor child(ren)			.449**	.022	.444**	.021	.437**	.020	.418**	.018	.418**	.018
Extended kin/nonrelatives			.137**	.017	.139**	.017	.137**	.017	.141**	.017	.141**	.017
Renter			.181**	.007	.178**	.006	.169**	.006	.158**	.005	.158**	.005
Coresident			.208**	.015	.202**	.014	.189**	.012	.172**	.010	.172**	.010
Foreign born					.090**	.013	.081**	.011				
High school education							−.031**	.004	−.030**	.004	−.030**	.004
Personal income (ln)							−.007**	.001	−.005**	.001	−.005**	.001
Investment income (ln)							−.003**	.000	−.003**	.000	−.003**	.000
English language ability									−.051**	.007	−.051**	.007
Immigrated												
1990–2000[a]									.362**	.036	.361**	.036
1980–1989									.270**	.032	.269**	.032
1970–1979									.139**	.030	.139**	.031
1969 or earlier									.008	.005	.007	.005
MSA variables												
Hispanic population											.0005[b]	.0002
Index of dissimilarity											−.005	.017
Rental vacancy											−.002	.002
Median gross rent (000s)											.038[a]	.019

Notes: b = unstandardized ordinary least squares regression coefficient; SE = standard error of coefficient; MSA = metropolitan statistical areas. Number of cases: individuals = 94,854 and MSAs = 297. Regression estimates based on weighted data.

[a] Reference group is U.S. born.

[b] Marginally significant between .05 and .01.

*p ≤ .01; **p ≤ .001, two-tailed test.

is lower as total personal income and investment income increase. Again, for all but the Mexican American group, the introduction of economic status variables reduces the size of the group identity coefficients but does not reduce the relationship to statistical nonsignificance.

In Model 5, we add variables for English language ability and duration of residence. Residential crowding is lower for persons with stronger English language skills. As well, the longer a foreign-born person lives in the United States, the lower the level of residential crowding. Individuals who have resided in the United States for 30 years or longer are not significantly different from their U.S.-born counterparts in terms of residential crowding. The pattern of relationships for the Hispanic ethnic status variables is similar to that for Model 4.

In our final model (Model 6), housing market characteristics are introduced. Only two of the variables are statistically significant. As size of the Hispanic population increases and as the cost of rental housing increases in these urban areas, the level of residential crowding also increases (marginally significant at a *p* value less than .05 with Level 2 significance levels based on MSA sample size of 297). In sum, an important finding is that even after we introduce an array of individual and contextual variables to the model of residential crowding, the impact of Hispanic ethnicity remains positive.

We also estimated logistic regression models for the full sample where the dependent variable was defined as whether the person lived in a household with 1.0 or more persons per room versus lived in a household with less than 1.0 person per room (tables available upon request). In general, the results are comparable in direction and statistical significance with the continuous measures of crowding. Two differences emerged: First, the coefficient for Puerto Rican ethnic group status became statistically insignificant after we added the immigrant status control and the coefficient for immigrated before 1969 became statistically significant. We repeated this approach by estimating logistic

Table 6. Multilevel Regression Results for Residential Crowding by Ethnic Group Among Persons Aged 65 Years and Older, 2000

(Fixed effects only)[a]	Non-Hispanic White		Mexican[b] American		Puerto Rican		Cuban American		Central American		South American	
	b	SE	b	SE	b	SE	b	SE	b	SE	b	SE
Individual variables												
Intercept	.302**	.009	.398**	.022	.324**	.020	.340**	.020	.401**	.081	.326**	.049
Age (years)	−.002	.004	−.000	.003	−.008	.010	−.014*	.005	−.047	.044	.012	.028
Age squared	.000	.000	−.000	.000	.000	.000	.0001*	.000	.000	.000	−.000	.000
Female	−.013**	.003	−.092**	.011	−.035**	.007	−.046**	.004	−.083*	.028	−.084**	.020
Married	.137**	.029	.129**	.007	.171**	.011	.217**	.016	.204**	.029	.137**	.015
Self-care limitation	.419**	.006	.019	.017	.018	.017	.006	.007	.061	.032	.003	.035
Child less than 18 years	.354**	.011	.673**	.027	.403**	.018	.415**	.025	.610**	.036	.432**	.038
Extended kin/nonrelatives	.144**	.018	.168**	.026	.211*	.042	.161**	.012	.043	.032	.135*	.039
Renter	.156**	.004	.182**	.011	.181**	.011	.255**	.024	.229**	.031	.249**	.018
Coresident	.158**	.008	.314**	.025	.267**	.039	.201**	.012	.337**	.047	.234**	.033
High school education	−.026**	.003	−.087**	.008	−.051**	.011	−.076**	.006	−.125**	.022	−.087**	.017
Personal income (ln)	−.002**	.001	−.016**	.004	−.002	.003	−.006*	.002	−.003	.007	−.005	.002
Investment income (ln)	−.003**	.000	−.007**	.001	−.007**	.001	−.008**	.001	−.008**	.002	−.011**	.002
English language ability	−.047**	.009	−.057**	.007	−.012	.010	−.013	.013	−.048**	.018	−.009	.019
Immigrated												
1990–2000	.324**	.052	.380**	.041	.128**	.030	.337**	.029	.206	.088	.315**	.044
1980–1989	.244**	.055	.318**	.057	.133**	.032	.134**	.019	.157*	.056	.205*	.065
1970–1979	.092*	.030	.237**	.043	.120**	.033	.047	.021	−.033	.049	.173*	.055
1969 or earlier[c]	−.003	.004	.085*	.018	.007	.018	.004	.021	−.056	.046	.093	.061
Metropolitan statistical areas variables												
Hispanic population	.001**	.000	.001*	.000	.002*	.001	.003**	.001	.004*	.001	.004**	.001
Index of dissimilarity	−.013	.018	.114	.086	.055	.065	−.113	.080	.018	.200	.079	.173
Rental vacancy	−.002	.002	−.000	.001	.015	.014	.012	.017	.048	.030	.072*	.024
Median gross rent (000s)	.033	.019	.313**	.067	.237*	.084	.136	.123	.611*	.197	.593*	.202
No. of cases[b]	35,122		33,125		7,988		10,983		4,135		3,501	

Notes: b = unstandardized ordinary least squares regression coefficient ; SE = standard error of coefficient; 297 metropolitan statistical areas.

[a] Regression estimates based on weighted data.

[b] Non-Hispanic White and specific Hispanic group coefficient differences are statistically significant when shaded in gray.

[c] Reference group are U.S. born persons.

*p ≤ .01; **p ≤ .001, two-tailed test.

regression models for elders living in housing with 1.5 or more persons per room (severe crowding) versus less residentially dense housing. Differences include that the coefficient for personal income becomes insignificant when adding duration of residence to the models, and the coefficient for median rent is statistically insignificant. Thus, our decision to use the continuous indicator of persons per room versus one based on the standard cut-points for crowding does not generally affect the interpretation of the regression results.

In the final stage of our study, we provide an evaluation of residential crowding for each Hispanic group and compare the results for each group with the White sample (see Table 6). This is useful in part because each of the Hispanic groups remain significantly different from non-Hispanic Whites after we introduce a range of factors expected to account for group differences in crowding (see Table 5). In addition, each Hispanic group has a different history of reception by the mainstream culture, the legal status upon immigration for some groups is different, and the relative size to one another and to the White majority is different. These groups are also geographically distributed in unique patterns that

may affect their housing market characteristics (e.g., Cubans tend to live in Florida, Puerto Ricans tend to live on the east coast, and Mexican Americans are the most geographically distributed across large and small towns across the United States). Finally, the most direct test of our hypotheses is accomplished by within-group analyses. To save space, we discuss only the assimilation and housing market relationships.

The relationship of English language ability with residential crowding is significant for Mexican American, Central American, and non-Hispanic White elders. Older persons in these groups who report strong English skills report less residential crowding. For the most part, the relationship of duration of residence in the United States with residential crowding is consistent in direction across all ethnic groups whereby the more recent the arrival, the higher the residential crowding. These results provide support for the assimilation hypothesis.

For the housing market variables, we find for all groups that residential crowding increases as the size of the Hispanic population increases. Conversely, in no case does the relationship between residential segregation and residential

density reach statistical significance. Thus, our hypothesis about living in areas with relatively large numbers of co-ethnic group members is supported, but the expected relationship between residential segregation and crowding is not supported.

Rental vacancy is positively related to residential crowding for South Americans only. We expected a negative relationship. It may be, as Myers and colleagues (1996) have suggested, that in some areas, a dual housing market exits, one for immigrants and poor people and one for nonimmigrants and persons with more economic resources. If housing is being rapidly added to an area but some segments of the population cannot afford the cost of the new housing, we might expect a positive relationship. It may be that South Americans are clustered in these types of housing markets. Finally, there is a positive relationship between median gross rent and crowding for all groups except non-Hispanic Whites and Cubans.

In supplementary analyses, we evaluated cross-level interactions to see if the relationship of personal income with crowding was modified by housing market rental costs. We found no significant relationships. However, we find that the random effects (slope) of personal income with residential crowding for Mexican Americans and Whites are significant, indicating that the ability to obtain less crowded housing based on personal income varies by housing market location for these two groups.

DISCUSSION

The goal of this study was to learn more about residential crowding patterns among older Hispanics and to investigate whether factors drawn from the extant literature are associated with spatial density at the housing level. Our results show that residential crowding, as defined by standards set by the federal government and employed by most researchers, is not common among older non-Hispanic Whites, but it is common among older Hispanics. As with other research, we confirm that housing tenure (owner, rental, and coresident status) is related to crowding (Friedman & Rosenbaum, 2004), with renters living in more crowded housing. Furthermore, older Hispanics who have better English language skills and who have lived in the United States longer (compared with U.S.-born Hispanics) report less crowded housing. We expected that residential segregation would be related to residential crowding (Pearce, 1988). This turns out not to be the case in this analysis. However, living in urban areas with relatively large Hispanic populations is related to higher levels of crowding.

It is theoretically important that we were not able to eliminate Hispanic–non-Hispanic group differences in residential crowding after including variables expected to account for this behavior—some of which emanate from the assimilation and place stratification perspectives. If these characteristics do not fully account for the differences, then what might explain the continued gaps? Clearly, there are unmeasured characteristics related to residential crowding (our finding of a random effect for the intercepts verifies this). It is plausible that there are unmeasured cultural factors that account for some of this variability. For example, research shows that Hispanics express more favorable attitudes about intergenerational coresidence than non-Hispanic Whites (Burr & Mutchler, 1999). Furthermore, privacy, a measure of subjective experience defined by having space to retreat to when desired, may not be a universally valued good. It may be that persons from some cultures prefer or are at least more accepting of closer personal distances and less privacy than others (e.g., Hall, 1966; Evans, Lepore, & Eshelman, 2008; Myers et al., 1996; Pader, 1994). Thus social norms and values associated with preferences for close physical proximity to others may not be universally shared. Furthermore, the explanation for these ethnic group differences may also be located in the fertility patterns and tighter spacing of generations of Hispanics compared with non-Hispanic Whites; we are also unable to test this proposition with Census data.

Our research does not evaluate whether residential crowding has negative, neutral, or even positive consequences for well-being in later life. The effect may be neutral, especially if the degree of residential crowding is consistent with the norms and values of a person's culture. Conversely, if crowding is detrimental to physical and mental health and if it adversely affects quality of life through its relationship to privacy, then older persons would be negatively affected (Office of the Deputy Prime Minister, 2004). It may be argued, for instance, that crowded households promote elder abuse because of perceived pressures and stresses felt by other household members brought on by loss of privacy. Perhaps falls, a serious threat to the well-being of some elders, are also more likely due to excessive clutter in residentially crowded households.

It is also possible that living in a residentially dense setting could have benefits, especially for persons with functional limitations and other needs, because more coresidents distributed across a smaller space means more eyes and ears available for looking after frail elders. Assistance may be provided with medication use, injuries from falls and other accidents may be responded to more quickly, and social and emotional support may be more consistently available. More research with different types of data is required to address these issues.

This study has several limitations. First, we examine cross-sectional data that does not support statements about causal relationships. Second, Census data do not allow us to look at change in residential crowding over time. The absence of measures of subjective crowding and cultural preferences for privacy and spatial density limit our ability to understand more fully which specific cultural factors are in play. We are also limited by the lack of data on social network characteristics (including number of children), which may play a role in the decision to live in more crowded

environments. Third, a recent study shows that several Census Bureau public-use data products, including the 2000 Census PUMS, have nonnegligible errors associated with the age and sex variables (Alexander, Davern, & Stevenson, 2010). These errors are presumed to be related to the misapplication of the Census Bureau's disclosure avoidance procedures. Thus, readers are advised to interpret the age and sex results in this study with appropriate caution.

Some policy issues are also raised by this research. Overcrowding (defined as living in housing with 1.5 or more persons per room) has long been considered a social problem (Myers et al., 1996). If overcrowding is considered a detriment to well-being (and a growing body of evidence suggests it is), then overcrowding may be reduced partly through the application of public policy. As Myers and colleagues argue, lack of affordable housing and a limited housing supply leads to overcrowding; thus, increasing the amount of federal housing subsidies for older persons would be one way of alleviating this problem. Furthermore, because overcrowding is more likely in some states and in some communities than others, policy makers at the local and state levels may need to take additional steps to assure quality housing for seniors. Finally, it may be that policy makers need to adjust their definition of what constitutes overcrowded housing if some groups are more comfortable living in denser living arrangements.

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