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The Hispanic Paradox: Race/ethnicity and Nativity, Immigrant Enclave Residence and Cognitive Impairment among Older US Adults

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ABSTRACT

Hispanics, and particularly foreign-born Mexican Americans, have been shown to fare better across a range of health outcomes than might be expected given the generally higher levels of socioeconomic disadvantage in this population, a phenomena termed the "Hispanic Paradox". Previous research on social disparities in cognitive aging, however, has been unable to address both race/ethnicity and nativity (REN) in a nationally-representative sample of US adults leaving unanswered questions about potentially "paradoxical" advantages of Mexican ethnic-origins and the role of nativity, socioeconomic status (SES), and enclave residence. We employ biennial assessments of cognitive functioning to study prevalent and incident cognitive impairment (CI) within the three largest US REN groups: US-born non-Hispanic whites (US-NHW), US-born non-Hispanic blacks (US-NHB), US-born Mexican Americans (US-MA), and foreign-born Mexican Americans (FB-MA). Data come from a nationally-representative sample of community-dwelling older adults in the Health and Retirement Study linked with the 2000 Census and followed over 10 years (N= 8,433). Large disadvantages in prevalent and incident CI were observed for all REN minorities respective to US-born non-Hispanic whites. Individual and neighborhood SES accounted substantially for these disadvantages and revealed an immigrant advantage: FB-MA odds of prevalent CI were about half those of US-NHW and hazards of incident CI were about half those of US-MA. Residence in an immigrant enclave was protective of prevalent CI among FB-MA. The findings illuminate important directions for research into the sources of cognitive risk and resilience and provide guidance about CI screening within the increasingly diverse aging US population.

INTRODUCTION

Despite longstanding interest in the implications of race/ethnicity and nativity (REN) for social stratification of health, little is known about how these factors may intersect to shape cognitive aging of US older adults. Debate about the presence or absence of a Hispanic Paradox – i.e., the finding that Hispanics and particularly foreign-born Mexican Americans have better outcomes on many aspects of health than expected given their generally poor socioeconomic status (SES) [1] -- pursued in other areas of health remains largely unexplored in cognitive aging. Nonetheless, there are profound implications for such disparities given that social and financial burdens for dementia alone are projected to equal or exceed all other top causes of mortality[2] and that immigrants of Latin American descent replaced Europeans in 2010 as the most prevalent group of older immigrants.[3]

A broad literature has explored racial and ethnic disadvantages in cognitive aging finding generally poorer outcomes among African American and Hispanic older adults that are attributed to social and economic disadvantages.[4] This includes life course accumulation of poor SES conditions, psychological stressors, and compromised cognitive engagement.[5] Consideration of nativity differences in cognitive aging draws attention to the question of whether sociocultural protections, such as stronger social capital and more salubrious health behaviors,[1,6-11] may offset these socioeconomic disadvantages. Literature on the Hispanic Paradox suggests that sociocultural protection may be able to offset socioeconomic disadvantages of immigrants,[1] however, those protections will likely vary by the etiology of the health outcome. Given the importance of early life socioeconomic conditions in shaping cognitive reserve,[5] it is unclear whether potential immigrant sociocultural protections–operating, for example through the psychosocial buffering of strong social support —will be sufficient to offset these risks. Reflective of this uncertainty, the few studies that have explored differentials in cognitive aging by nativity have shown inconsistent or null results, often in the same sample.[6,7,12-16] A recent innovation in research on the Hispanic Paradox has been to suggest that sociocultural protection may be a fundamental upstream determinant of

health that is structured by the places in which people live through, for example, social interactions in neighborhoods.[1,8-11,17] Unfortunately, evidence considering cognitive aging and ethnic or immigrant enclaves is also sparse with the only two known studies offering conflicting findings.[15,18]

In this study we evaluate the relative racial, ethnic and nativity differences in the prevalence and incidence of cognitive impairment (CI) in a nationally-representative sample. We evaluate the extent to which potential cognitive advantages in older Mexican immigrants' incidence of CI may be masked by individual and residential components of socioeconomic disadvantage. We then evaluate the extent to which residence in immigrant-ethnic enclaves might structure immigrant advantages net socioeconomic status.

METHODS

Data and measures

We used data from the Health and Retirement Study (HRS), an ongoing nationally-representative, multi-cohort longitudinal survey of US older adults. Our analytic sample, detailed below, came from the HRS cohort selected in 1992 using household probability sampling of non-institutionalized men and women age 51-61, and their partners or spouses, with oversampling of Hispanics, blacks and Florida residents. The initial response rate was 81.6%, and rates for subsequent biennial waves have been above 85%. Our primary data source was the RAND-HRS, a cleaned and streamlined collection of public-use variables.[19] The institutional review board of RAND Corporation approved the study, and all respondents gave informed consent.

We employed cognition measures from the RAND-HRS to identify the presence of cognitive impairment (CI) among self-reporting respondents as those with a score of 11 or less from the 27-point modified English and Spanish version of the Telephone Interview for Cognitive Status (TICS). The TICS evaluates immediate and delayed word call, the serial 7's subtraction test of working memory, and backward counting to assess

attention and processing speed. Proxy-reported respondents were categorized as having CI using proxy- and interviewer-assessments of cognition and the instrumental activities of daily living (IADLs). Clinical validation of this CI measurement methodology and the instruments are detailed elsewhere.[20] It is noteworthy that the Spanish version of the TICS has been validated in Spanish-speaking populations, as has the Mini-Mental State Examination upon which it is modeled.[18]

We also employed RAND-HRS measures of age at each wave, gender, race, ethnicity, birthplace, highest educational attainment, marital status in 2000, and net total assets in 2000 (assessed using a detailed question series with item non-response imputed by RAND-HRS). We identified in sufficient numbers for analysis respondents who were US-born non-Hispanic white (US-NHW), US-born non-Hispanic black (US-NHB), US-born Mexican American/Chicano (US-MA), and foreign-born Mexican American/Chicano (FB-MA).

Social, economic, and demographic characteristics of the respondents' residential census tract in 2000 were linked using the HRS geographic data file. From the 2000 US Census, we selected previous measures of neighborhood residential homogeneity.[8-11,21] These included the tract proportion of Hispanics; Mexican Americans, foreign-born individuals, and foreign-born Mexican Americans. They also included the Census Bureau definitions of linguistically isolated households, including the tract proportion of individuals age 5 and older who speak Spanish at home, and households in which all adults speak a language other than English and none speak English very well. In addition, we assessed neighborhood socioeconomic disadvantage using a latent measure of the socioeconomic status of U.S. census tracts (including median household income, education, unemployment, female-headed households, and poverty) developed using exploratory and confirmatory factor analyses described elsewhere.[22] We categorized neighborhood socioeconomic status (NSES) by quintile thresholds calculated in the sample of all US tracts.

Analysis plan and statistical models

The study baseline is the year 2000 (the first wave after TICS was introduced in 1996 with contemporaneous US Census data), and we selected US-NHW, US-NHB, US-MA, or FB-MA respondents from the initial HRS cohort (N=8,741). Our sample excluded the older aged Assets and Health Dynamics (AHEAD) cohort, because incident cognitive impairment differentials by race, ethnicity and nativity were weaker, but there was insufficient sample to fully test cohort differences (not shown). It also excluded two cohorts added in 1998 for which mean TICS increased between 1998 and 2000, suggesting second-administration practice-effect bias.[23] After excluding respondents with item non-response (primarily unknown tracts: n=278), the baseline HRS cohort sample entailed 8,433 adults aged 51 and older.

We modeled the prevalence of CI in 2000 using multivariate logistic regression. Then, among the cognitive normal sample in2000 (N=7,076), we modeled the incidence of CI using discrete-time hazards analyses. Respondents contributed to the risk pool for each biennial assessment until 2010 and were censored after CI was observed or if they exited the community-dwelling HRS sample (i.e., via unit non-response, entry into institutionalized care, or death). In sensitivity analyses, we also employed a multinomial extension of the above discrete-time hazards model to evaluate the competing-risks of CI, death, or attrition relative to remaining cognitively normal. We evaluated parameter estimates, their standard errors, and (2-sided) tests of statistical significance for the predictors of interest and compared the relative fit of models using the design-based Akaike Information Criterion (dAIC). The dAIC is a modification of the AIC that is valid under complex sampling for which a lower value indicates better fit. [24] All analyses employed year 2000 sample weights provided by the HRS to make nationally-representative inferences and adjust for the stratified sampling and clustering of households within neighborhoods. The primary analyses and multinomial sensitivity tests were respectively estimated using survey packages in R and Stata version 13.

RESULTS

Descriptive statistics in Table 1 show that all individual characteristics and neighborhood census tract characteristics of the HRS cohort of older adults in the year 2000 differed significantly by race, ethnicity and nativity. FB-MA, who were, on average, age 62 had the fewest years of education and, along with US-NHB, the fewest assets, although assets were considerably higher among US-NHW than any other group. For both FB-MA and US-MA, the combined rates of marriage and partnership were about 70% and substantially higher than for US-NHB (53%) but only slightly lower than for US-NHW (77%). In 2000, FB-MA resided in census tracts with the highest levels of ethnic and linguistic homogeneity (e.g., tracts were on average 57% Mexican American, 29% foreign-born, and 61% Spanish-speaking). FB-MA also resided in tracts with the lowest levels of NSES (i.e., 77% in the bottom two quintiles compared with 68% for US-MA, 74% for US-NHB, and 27% for US-NHW), although NSES was low among all REN minorities

Higher odds of prevalent CI in 2000 were observed for all REN minorities adjusting for age and gender, with US-NHB and FB-MA respectively showing 5 to 7 times the odds of CI and US-MA about 3.5 times the odds of CI as US-NHW (Model 1, Table 2). After adding individual and census tract social and economic factors (Model 2), FB-MA were no longer observed at a disadvantage relative to US-NHW but instead had about half the odds of prevalent CI as US-NHW or as US-MA (odds ratio (OR)=0.54, 95% confidence interval= 0.31, 0.92). The OR of prevalent CI respective to US-NHWwas reduced by about half for US-NHB and reduced to statistical non-significance for US-MA. Increased education, wealth and NSES are all strongly protective of prevalent CI.

We next considered adjustment for residential immigrant-ethnic homogeneity (Model 3) and found that the advantages of FB-MA are reduced to statistical non-significance at about three-quarters the odds of prevalent CI as US-NHW. Moreover, residential immigrant-ethnic homogeneity was independently associated with lower odds of prevalent CI. In considering whether this relationship varied by REN (Model 4), we observed a stronger protective association of residential immigrant-ethnic homogeneity for FB-MA than US-NHW. Although the stronger association of homogeneity for FB-MA

did not quite reach statistical significance, the dAIC for Model 4 indicated that this was the best fitting model.

Analyses of the REN associations with incident CI reflected similar patterns. Adjusting only for age and gender, REN minorities showed disadvantages respective to US-NHW that range from 2.6 to 3.4 times the biennial hazards of incident CI as US-NHW (Model 1, Table 3). These disadvantages were reduced for US-NHB and US-MA and reversed for FB-MA by adjusting for individual and census tract socioeconomic status (Model 2), with strong protective associations again observed for increased education, wealth and NSES, and stronger advantages of education among females. FB-MA had a lower hazards ratio (HR) that broached statistical significance compared to US-NHW and a statistically significantly lower HR compared to US-MA, with about half the hazards of incident CI (i.e., HR=0.53, 95% confidence interval: 0.35, 0.80).

Inclusion of residential immigrant-ethnic homogeneity (Model 3), strengthened the advantages of FB-MA to a statistically significant 64% lower hazards of incident CI than US-NHW, but left the advantages relative to US-MA largely unchanged (i.e., HR=0.51, 95% confidence interval: 0.33, 0.77). A significant independent increase in the hazards of incident CI was associated with greater residential immigrant-ethnic homogeneity. Finally, we determined that model fit was not improved by including cross-level interactions for potential REN differences in exposure to residential immigrant-ethnic homogeneity (i.e., Model 4). It is nonetheless noteworthy that the magnitude and direction of these cross-level interactions suggested that increased hazards associated with immigrant ethnic homogeneity in Model 3 may be driven by findings for US-NHW, with immigrant ethnic homogeneity weakly protective of incident CI for FB-MA.

Sensitivity Analyses

Several sensitivity tests were conducted (analyses available upon request). We first determined that model fit was not improved by: incorporating age differences in hazards by racial, ethnic and nativity; incorporating racial, ethnic and nativity differences in individual level predictors; or by using alternative indicators of immigrant enclave

residential homogeneity. We then determined that sparse data problems on FB-MA at the upper levels of education were not driving findings away from the null. As in the full sample, FB-MA were advantaged relative to US-NHW and US-MA for prevalent and incident CI, respectively, after restricting the sample to respondents with high school or lower education. Finally, analysis of mortality and attrition as a competing risk for incident CI showed no evidence of differential selection of FB-MAs or US-MAs via attrition and no evidence of differential selection via mortality.

DISCUSSION

Our study provides the first known analysis of the respective advantages and disadvantages in cognitive aging experienced by the largest four REN groups of older adults in the United States. We extended previous research on the marked disadvantages in cognitive aging among non-Hispanic blacks and Hispanics respective to non-Hispanic whites[4] to show that disadvantages among Mexican Americans depend on their nativity. Consistent with literature on the life course socioeconomic origins of cognitive risk and resilience,[5] we found that SES disadvantage places all three minority REN groups at significantly higher risk for poor cognitive aging -- especially FB-MA who have accumulated the least amount of education and wealth and are exposed to the highest levels of neighborhood SES disadvantage. SES disadvantages respectively accounted fully and for about half of the increased risk of prevalent CI among US-MA and US-NHB respective to US-NHW, and substantively account for US-MA and US-NHB increased risk of incident CI. The most novel insight is that once SES disadvantage was held constant, FB-MA experienced about half the odds of prevalent or incident CI as US-MA and about half the odds of prevalent CI as US-NHW. This extends to CI similar previous findings for mortality that FB-MA advantages are suppressed by their socioeconomic disadvantage. [25]

Although these immigrant advantages are large, especially for prevalent CI, they reflect a pattern referred to as a 'weak' version of the Hispanic Paradox,[1] given their

dependence on adjusting for SES. The findings nonetheless strengthen and extend the only previous evidence of immigrant cognitive health advantages,[6,7] which had been restricted to the subset of FB-MA who migrated during working ages and employed data from Mexican Americans living in Southwestern states.

Our study found mixed evidence for whether the observed 'weak' version of the Hispanic Paradox in cognitive aging might be fundamentally structured by social interactions occurring in immigrant enclaves. Living in an enclave was independently associated with lower prevalence of CI and substantively accounted for FB-MA's cognitive advantages. Moreover, findings were suggestive of enclave residence offering the most protection for FB-MA. These findings support and extend previous evidence that living in areas with higher percentages of Mexican Americans is protective of cognitive aging.[15] Analyses of incident CI, however, showed little evidence of a protective role for enclaves and in fact enclave residence was associated with an increased risk of developing CI, which appeared to be driven by results for US-NHW. Given that these incident analyses necessarily exclude cognitively impaired adults at baseline who were on average an older subpopulation, we speculate that the protective role of enclaves may be strongest in later older adulthood. A promising area for future research will be to evaluate whether social support and social cohesion provide a mechanism for enclave advantages by buffering against neurological insult related to psychosocial and physical health stressors.[28]

Although the HRS is the largest, most recent nationally-representative data source for studying cognitive aging of older US adults, the small sample sizes of Mexican Americans imposed a primary study limitation. . In the prevalent analyses, we observed 94 US-MA and 84 FB-MA with CI from a sample of 311 US-MA and 209 FB-MA. In the incident analyses, we observed 98 cases of CI over 872 person-years of observations on 217 cognitively normal US-MA and 71 cases of CI over 487 person-years of observations on127 cognitively normal FB-MA. Our estimates of REN differentials and

the role of enclaves should thus be interpreted with appropriate caution regarding statistical precision and sparse data biasing estimates away from the null. Sensitivity analyses suggest that the findings may be most generalizable to respondents with lower educational attainment. Sample size limitations also impeded us from reliably estimating differentials among US-MA and FB-MA by measures of acculturation. Future research with larger data samples is needed. Another area for future research will be to match analyses of cognitive aging among Mexican American migrants to the US with the trajectories of their counterparts in Mexico who may also include return migrants from the U.S. Such analyses could shed light into the 'healthy migrant' hypothesis that FB-MA advantages are fundamentally determined by migrants being a healthier subset of the origin population.[1] Although such analyses were not possible with the HRS, we were able to determine that FB-MA advantages were not upwardly biased by differential attrition or death.

CONCLUSION

Population health planning is needed to address the roughly $200 billion estimate of total societal costs of dementia and the nearly two-fold increase expected with population aging.[2] The high risk of prevalent and incident CI documented in this study across REN minority populations underscores the importance of careful clinical screening and outreach into these communities to enhance early detection and treatment of CI. This includes attention to potential language, cultural and health literacy barriers and accurate assessment, referral and treatment.

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TABLES

Table 1. Sample descriptive statistics (means or proportions) for cognitively normal US-born non-Hispanic whites, US-born non-Hispanic blacks, and US-born and foreign-born Mexican Americans aged 51 and older in the Health and Retirement Survey (HRS), 2000 [a]

	Total (N=8,433)	US-born non-Hispanic white (N=6,566)	US-born non-Hispanic black (N=1,347)	US-born Mexican-American (N=311)	Foreign-born Mexican-American (N=209)	Difference by race/ethnicity and nativity *P*-value
			Individual characteristics in 2000			
Age (mean in years)	63.0	63.1	63.2	62.4	61.9	0.001
Female gender	0.53	0.53	0.57	0.49	0.56	0.003
Highest educational attainment (mean in years)	12.5	12.9	11.4	9.7	5.2	<0.001
Marital status						<0.001
Married	0.72	0.75	0.48	0.65	0.66	
Partnered	0.03	0.02	0.05	0.03	0.04	
Separated/divorced	0.11	0.10	0.22	0.16	0.16	
Widowed	0.11	0.10	0.19	0.12	0.12	
Never-married	0.03	0.03	0.06	0.03	0.02	
	11.4	11.8	8.9	9.9	8.9	<0.001

Assets (mean of natural logarithm in dollars)						
Neighborhood census tract characteristics in 2000						
Neighborhood socioeconomic status						<0.001
Quintile 1	0.14	0.08	0.49	0.44	0.58	
Quintile 2	0.20	0.19	0.25	0.24	0.19	
Quintile 3	0.24	0.25	0.12	0.16	0.13	
Quintile 4	0.22	0.24	0.08	0.11	0.09	
Quintile 5	0.21	0.23	0.07	0.06	0.01	
Percent Mexican American	6.5	4.4	5.4	42.3	57.2	<0.001
Percent foreign-born	8.0	7.0	8.1	20.9	28.9	<0.001
Percent foreign-born Mexican American	2.6	1.7	2.7	15.9	23.6	<0.001
Percent Spanish-speaking	8.4	6.0	8.8	44.8	61.4	<0.001
Percent linguistically isolated Spanish-speaking	13.7	12.8	17.6	21.1	24.9	<0.001

[a] Data come from the HRS cohort sampled in 1992. All statistics are sample-weighted and adjusted for the stratified sampling design and clustering of households within census tracts. Standard error denoted in parentheses.

Table 2. Odds of prevalent cognitive impairment by race, ethnicity and nativity adjusting for individual and neighborhood census tract characteristics of U.S. adults age 51 and older in the Health and Retirement Survey (HRS), 2000 [a]

	Model 1 OR (95% CI)	Model 2 OR (95% CI)	Model 3 OR (95% CI)	Model 4 OR (95% CI)
Age in years	1.08 (1.06, 1.10)	1.07 (1.05, 1.09)	1.07 (1.05, 1.09)	1.07 (1.05, 1.09)
Race/ethnicity and nativity (reference: US-born non-Hispanic white)				
US-born non-Hispanic black	5.19 (4.38, 6.16)	2.43 (1.97, 2.99)	2.40 (1.95, 2.95)	2.55 (2.02, 3.21)
US-born Mexican American	3.56 (2.58, 4.92)	0.99 (0.69, 1.42)	1.27 (0.86, 1.88)	1.76 (0.77, 4.06)
Foreign-born Mexican American	6.78 (4.70, 9.76)	0.53 (0.33, 0.87)	0.74 (0.44, 1.26)	5.04 (0.53, 48.34)
Female (reference: Male)	0.62 (0.54, 0.71)	0.57 (0.49, 0.67)	0.57 (0.49, 0.67)	0.57 (0.48, 0.67)
Highest educational attainment in years		0.76 (0.73, 0.78)	0.76 (0.74, 0.79)	0.76 (0.74, 0.79)
Marital status (reference: married)				

Partnered	1.76	1.79	1.78
	(1.10, 2.84)	(1.11, 2.87)	(1.10, 2.87)
Separated/divorced	0.87	0.87	0.87
	(0.68, 1.11)	(0.68, 1.2)	(0.68, 1.11)
Widowed	0.95	0.95	0.96
	(0.75, 1.21)	(0.75, 1.21)	(0.76, 1.21)
Never married	1.07	1.06	1.05
	(0.68, 1.70)	(0..67, 1.70)	(0.66, 1.68)
Assets (natural logarithm of dollars)	0.91	0.91	0.91
	(0.89, 0.93)	(0.89, 0.93)	(0.89, 0.93)
Neighborhood census tract characteristics			
Neighborhood socioeconomic status (reference: quintile 3)			
Quintile 1	1.37	1.45	1.49
	(1.07, 1.74)	(1.13, 1.85)	(1.16, 1.90)
Quintile 2	1.08	1.12	1.11
	(0.87, 1.34)	(0.90, 1.39)	(0.90, 1.38)
Quintile 4	0.68	0.67	0.67
	(0.53, 0.86)	(0.52, 0.85)	(0.52, 0.85)
Quintile 5	0.75	0.72	0.73
	(0.56, 0.99)	(0.54, 0.96)	(0.55, 0.97)

Log-percent of foreign-born Mexican American			0.87	0.92
			(0.79, 0.96)	(0.82, 1.03)
Log-percent of foreign-born Mexican American * US-born non-Hispanic black				0.89 (0.71, 1.11)
Log-percent of foreign-born Mexican American * US-born Mexican American				0.83 (0.60, 1.16)
Log-percent of foreign-born Mexican American * Foreign-born Mexican American				0.51 (0.24, 1.06)
Model dAIC	6058.1	5298.4	5290.7	5291.1

Abbreviations: OR= odds ratio, CI=confidence interval; dAIC=designed-based Akaike information criterion.

[a] Data come from the HRS cohort. All statistics are sample-weighted and adjusted for the stratified sampling design and clustering of households within census tracts. All models employ data on 8,433 unique individuals.

Table 3. Biennial hazards of incident cognitive impairment by race, ethnicity and nativity adjusting for individual and neighborhood census tract characteristics of U.S. adults age 51 and older in the Health and Retirement Survey (HRS), 2000-2010 [a]

	Model 1 HR (95% CI)	Model 2 HR (95% CI)	Model 3 HR (95% CI)	Model 4 HR (95% CI)
Age in years (time-varying)	1.10 (1.09, 1.11)	1.10 (1.09, 1.11)	1.10 (1.09, 1.11)	1.10 (1.09, 1.11)
Race/ethnicity and nativity (reference: US-born non-Hispanic white)				
US-born non-Hispanic black	3.07 (2.67, 3.52)	2.35 (2.02, 2.73)	2.36 (2.03, 2.75)	2.42 (2.02, 2.90)
US-born Mexican American	2.61 (1.99, 3.43)	1.46 (1.10, 1.93)	1.27 (0.94, 1.72)	1.13 (0.47, 2.73)
Foreign-born Mexican American	3.39 (2.45, 4.69)	0.77 (0.55, 1.08)	0.64 (0.45, 0.93)	0.82 (0.23, 2.92)
Female (reference: Male)	0.83 (0.74, 0.92)	0.80 (0.71, 0.90)	0.80 (0.71, 0.90)	0.80 (0.71, 0.90)
Highest educational attainment in years		0.87 (0.85, 0.89)	0.87 (0.85, 0.89)	0.87 (0.85, 0.89)

Female* Highest educational attainment	0.94	0.94	0.94
	(0.91, 0.97)	(0.91, 0.98)	(0.91, 0.98)
Marital status in 2000 (reference: married)			
Partnered	1.16	1.15	1.15
	(0.85, 1.59)	(0.84, 1.58)	(0.84, 1.58)
Separated/divorced	0.98	0.98	0.98
	(0.83, 1.17)	(0.82, 1.16)	(0.82, 1.16)
Widowed	0.90	0.90	0.90
	(0.75, 1.07)	(0.75, 1.07)	(0.75, 1.07)
Never married	1.14	1.13	1.13
	(0.81, 1.59)	(0.81, 1.58)	(0.81, 1.58)
Assets in 2000 (natural logarithm of dollars)	0.95	0.95	0.95
	(0.94, 0.97)	(0.94, 0.97)	(0.94, 0.97)
Neighborhood census tract characteristics in 2000			
Neighborhood socioeconomic status (reference: quintile 3)			
Quintile 1	0.98	0.94	0.94
	(0.83, 1.15)	(0.80, 1.12)	(0.80, 1.12)
Quintile 2	0.95	0.93	0.93
	(0.82, 1.10)	(0.80, 1.08)	(0.80, 1.08)
Quintile 4	0.80	0.81	0.81

		(0.69, 0.93)	(0.75, 1.07)	(0.69, 0.94)
Quintile 5		0.72	0.74	0.74
		(0.61, 0.86)	(0.81, 1.58)	(0.62, 0.88)
Log-percent of foreign-born Mexican American			1.08	1.09
			(1.02, 1.15)	(1.01, 1.17)
Log-percent of foreign-born Mexican American * US-born non-Hispanic black				0.97 (0.84, 1.11)
Log-percent of foreign-born Mexican American * US-born Mexican American				1.04 (0.75, 1.46)
Log-percent of foreign-born Mexican American * Foreign-born Mexican American				0.92 (0.63, 1.36)
Model dAIC	13581.5	13167.1	13162.8	13168.2

Abbreviations: HR= hazard ratio, CI=confidence interval; dAIC=designed-based Akaike information criterion.

[a] Data come from the HRS cohort. All statistics are sample-weighted and adjusted for the stratified sampling design and clustering of households within census tracts. Model 1 and Model 2 employ data on 7,076 unique individuals with 32,243 biennial person-years of observations.