Disability and self-rated health: Exploring foreign- and U.S.-born differences across adulthood

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ABSTRACT

There is limited inquiry regarding how immigrant status intersects with disability to influence health across adulthood. As the U.S. population continues to age, especially immigrants, understanding how disability influences health is imperative. Using 2010–2018 National Health Interview Survey data ($n = 461,010$) and logistic regression models, we investigate how differences in reporting Activity of Daily Living (ADL) disability influence reports of self-rated health (SRH) between foreign- and U.S.-born respondents (ages 25+) by race/ethnicity (non-Hispanic White, non-Hispanic Black, Hispanic, and non-Hispanic Asian) by age group (25–64 and 65+). Among those ages 25–64, foreign-born respondents generally report lower or similar rates of fair/poor SRH and ADL disability when compared to their U.S.-born peers. Among those ages 65+, we find that foreign-born respondents are at greater risk of fair/poor SRH compared to their U.S.-born peers. Additionally, while having ADL disability greatly increases the likelihood of fair/poor SRH, the impact of this association differs by race/ethnicity/nativity and age. Among those 25–64, having ADL disability appears to be especially, negatively impactful for SRH among foreign-born groups, particularly Hispanics and non-Hispanic Whites. However, among those ages 65+, having ADL disability is less impactful on the SRH of foreign-born respondents, especially non-Hispanic Blacks and Hispanics. Our findings shed new light on marginalization-related diminished returns by showing how ADL disability influences SRH differently between foreign-born groups across adulthood.

Introduction

The U.S. population has become increasingly diverse in recent decades, coinciding with a rapid aging of the population (Melvin et al., 2014). These demographic transitions will culminate in more Americans living with a disability, a phenomenon that more often occurs later in life (Infurna and Wiest, 2018), and especially among racial/ethnic minority groups (Cantu et al., 2013). This concern is particularly salient for immigrants who not only face unique social and economic challenges (Castañeda et al., 2015) but are aging relatively faster than their U.S.-born counterparts (Colby and Ortman, 2015). Indeed, in 2020, 17% of the foreign-born population consisted of adults ages 65+; however, this proportion is expected to rise to 30% by 2050 (Colby and Ortman, 2015). As such, investigating immigrant health through the lens of disability, age, and racial/ethnic health disparities is critically important to understanding the future health profile of the American population.

Past research examining immigrant health finds that certain foreign-born populations in the U.S. experience mortality disparities such as cardiovascular disease (Guadamuz et al., 2021) and breast cancer (Pruitt et al., 2016). However, despite these challenges, immigrants commonly fair better than their U.S.-born peers on health measures such as obesity and smoking rates (Singh et al., 2013). This phenomenon is termed the "healthy immigrant effect" and is thought to be due to voluntary migration, health selection, strong social networks, positive health behaviors, and relatively limited exposure to discriminatory environments in the U.S. – for an overview, please see: (Markides and Rote, 2019). However, as immigrants age, there is often a reversal in this health advantage that leads them to report higher or similar rates of disability and comorbidity than their U.S.-born counterparts (Melvin et al., 2014), (Sheftel and Heiland, 2018). Specifically, many middle-age foreign-born individuals report lower rates of functional limitation and disability than U.S.-born individuals but lose this advantage later in life (Melvin et al., 2014). This phenomenon has been referred to as 'disability crossover' (Sheftel and Heiland, 2018), (Levchenko, 2021).

Also, foreign-born individuals generally arrive to the U.S. with lower obesity rates than their U.S.-born counterparts, though immigrant risk of obesity increase with longer duration in the U.S. (Singh et al., 2013). Moreover, older, particularly Hispanic, immigrants report exceptionally high rates of depressive symptoms and inflammation (Boen and Hummer, 2019). Previous research have attributed similar findings to marginalization-related diminished returns (MDRs) because immigrants do not receive the same health benefits from upward mobility as their U.S.-born peers [(S. Assari et al., 2020; Assari, 2020) (S. Assari et al., 2020)]. Thus, it is important to investigate how disability status reflects the health of immigrants later in life.

Activities of Daily Living (ADL) are integral to disability because they encapsulate specific limitations related to self-care. Past ADL disability research using National Health Interview Survey (NHIS) data found that foreign-born Hispanics experience longer disabled life expectancy (i.e., expected remaining life with disability), especially compared to U.S.-born non-Hispanic (NH) Whites (Hayward et al., 2014). Additionally, research examining disability prevalence by nativity among NH Blacks, NH Whites, and various Hispanic ethnic groups ages 50+ finds that foreign-born Blacks have markedly higher rates of disability compared to U.S.-born Whites (Melvin et al., 2014). Foreign-born Asians also tend to have high prevalence of disability when compared to U.S.-born NH Whites, though there are notable differences by duration in U.S. and country of origin (Mutchler et al., 2007).

Even as previous research has indicated higher levels of disability among immigrants, the importance of disability status for general health for immigrants and how it compares to U.S.-born individuals remains less clear. This is an important oversight given that previous research has documented disparities in disability across racial and ethnic groups (Courtney-Long et al., 2017; Horner-Johnson et al., 2014; Warner and Brown, 2011), and the implications of disability for self-rated health (SRH) has been shown to vary by race/ethnicity (Wolf et al., 2008). Specifically, one study found that the impact of disability on reporting poor to excellent health was half as damaging for Hispanics compared to Whites, though this study did not examine by nativity (Wolf et al., 2008). We build on this research by systematically analyzing the implications of disability for SRH and how this varies by race/ethnicity, nativity, and age.

SRH is a widely validated measure for mortality and an important predictor of population differences in objective measures of health (Idler and Benyamini, 1997). Thus, it is important to understand the differential implications that disability has for SRH because people with disabilities may construct and appraise their health differently than their non-disabled counterparts (Drum et al., 2008). Indeed, people with disabilities generally report poorer health across all racial and ethnic groups (Wolf et al., 2008). The abstract basis of SRH allows respondents from diverse backgrounds to differentially interpret their meaning of health (Bjorner et al., 2005); this is particularly important when researching the cultural nuances of nativity (Maskileyson et al., 2021) and health ramifications of disability (Drum et al., 2008).

The patterns documented above may benefit from a greater understanding of whether disability differentially influence SRH based on nativity and race/ethnicity. As such, reversal of the "healthy immigrant effect", in terms of disability and comorbidity disadvantage later in life (Melvin et al., 2014), (Markides and Rote, 2019; Sheftel and Heiland, 2018; Levchenko, 2021), is believed to be an amalgamation of social processes – i.e., less immigrant selection on health, acculturation to poor health habits, and/or increased exposure to the negative health environment in the U.S. Of the potential explanations for the "healthy immigrant effect", health selection has consistently received empirical support across different immigrant groups and country of destination (Markides and Rote, 2019), (Ichou and Wallace, 2019). Migrating is an arduous task, and in the U.S., most migrants are seeking employment opportunities. Given these factors, it is believed that immigrants are positively selected on health prior to migration. However, this explanation has only consistently received support among working age immigrants.

Health selection is weaker, and may even be negative, as older immigrants often migrate to reunite with family (Angel et al., 2014). Health selection has been found to be weaker for older immigrants than their working age counterparts (Markides and Rote, 2019), (Ghimire and Bhandari, 2020). Unhealthy assimilation to negative health behaviors (Escobar-Agreda et al., 2021) and increased exposure to the potentially health deleterious environment (Rivera-Navarro et al., 2020) in the U.S. have also been shown to lead to a health convergence between immigrants and U.S.-born individuals and may even result in worse health in old age (Markides and Rote, 2019). If older immigrants are not recent migrants, then they must have a higher duration of exposure to the negative health environment found in the U.S. Additionally, the array of stressors embedded in the immigrant experience (e. g., discrimination; adaptation; isolation) can take a toll on one's health (Castañeda et al., 2015), (Rivera-Navarro et al., 2020; Markides and Gerst, 2011; Nguyen et al., 2021). These factors likely vary by race/ethnicity, as the U.S. is highly stratified by race/ethnicity on a myriad of factors, including health.

Disability is a health limitation that is relatively rare among younger people but is fairly common among older adults (Okoro et al., 2016). Among older immigrants, disability is likely more common and may help explain the worse health found among older immigrants. Additionally, given the discussion above concerning the "healthy immigrant effect" and health convergence, it is likely that the experience of disability impacts health differently by nativity and age. It is likely that health selection that is prevalent among the working age immigrant adults is not present among those with disabilities as these immigrants are likely family reunification migrants and not seeking employment. Though the same cultural and social factors that lead immigrants to have better health behaviors and outcomes than their U.S.-born peers may be present among those with disabilities. Disability status may also be especially harmful to the health of immigrants as having a disability likely leads to greater contact with the U.S. health care system that tends to lack cultural competency and provide substandard care (Hill et al., 2021), especially among those with low socioeconomic status (Ghimire and Bhandari, 2020).

Broadly, we contribute to previous research examining the health of immigrants across adulthood by considering how disability may impact self-reported health net of important covariates. Thus, we endeavor to provide a comprehensive documentation regarding the racial/ethnic influence of disability on SRH among U.S. adults and how it varies by nativity and across age.

Methods

Participants and data collection

Data were obtained from the National Health Interview Survey (NHIS), a large dataset conducted annually regarding the health information on civilian noninstitutionalized people in the U.S. The NHIS was ideal for this analysis as is nationally representative and provides large enough cell sizes to stratify by immigrant status, race/ethnic group, and ADL disability. Specifically, the 2010–2018 NHIS datasets were selected and pooled; these years were chosen due to variables we analyzed being consistently collected and measured during those years, 2018 being the most recently released given time of analysis, and occurrence of two major historical events during this period: (1) the decline in Mexico-U.S. migration stemming from the Great Recession (Villarreal, 2014) and (2) implementation of the Affordable Care Act which expanded health care coverage among immigrants (Bustamante et al., 2021). The NHIS started with 868,476 respondents. We limited our sample to respondents ages 25+ due to the consideration of the covariates (educational attainment and marital status information is not applicable) and disability prevalence is relatively rare among children and adolescents ($n = 293{,}105$). Additionally, we limited our sample to those who identify as NH White,

NH Black, Hispanic, or NH Asian because of the interest in immigration and sample size consideration ($n = 14,674$). Lastly, we excluded individuals who were missing reports of fair/poor SRH ($n = 834$) and any other covariates ($n = 99,853$). Therefore, we were provided with an analytical sample of $n = 460,010$.

Measures

Fair/poor self-rated health

NHIS respondents were asked, "Would you say your health in general is excellent, very good, good, fair, or poor?" Consistent with other studies (Fahmy and Testa, 2021), (Cornwell and Goldman, 2020) and failure with the Brant Test when considering ordinal models (Brant, 1990), we recoded these five responses into the following categories: (0) Good/very good/excellent; (1) Fair/poor.

Race/ethnicity/nativity

NHIS respondents reported their race and ethnicity separately but was then recoded into a race/ethnicity category by the primary source. Nativity was determined by asking respondents if they were born in the U.S. or District of Columbia. Therefore, those born in U.S. territories, namely Puerto Rico, were not categorized as U.S.-born. We include the four largest racial/ethnic groups in the U.S. commonly compared in health disparities research (Read et al., 2021), and U.S.-born variable to create a unique measures with the following categories: U.S.-born NH White (reference); foreign-born NH White; U.S.-born Hispanic; foreign-born Hispanic; U.S.-born NH Black; foreign-born NH Black; U.S.-born NH Asian; foreign-born NH Asian.

Activity of daily living disability

NHIS respondents reported if they had any difficulty in any of the following six separate activities of daily living: bathing, leaving the bed, dressing, eating, toileting, and moving around the home. We created a binary variable that describes if respondents reported difficulty in any of these six categories: (0) No ADL disability; (1) ADL disability. In addition, we analyzed ADL disability as a 0–6 count variable and assessed these six items separately to find trends in certain race/ethnicity/nativity groups. Results from analyses of the count variable were similar to the ones presented here.

Covariates

We also accounted for demographic and socioeconomic variables related to health. Our primary demographic characteristics, which have shown relationships with immigrant SRH in prior research (Garza et al., 2017), were age, gender, marital status, and education. We included region of residence due to the various immigrant destinations and immigration policies across the U.S. that can inform health outcomes (Flippen and Farrell-Bryan, 2021) . Health insurance was included because it is an indicator of health care access which immigrants often lack, especially undocumented individuals (Bustamante et al., 2021) . Home ownership was included as a wealth indicator that informs SRH (Miranda et al., 2017).

Analytic strategy

We presented estimates separately for working age adults (ages 25 to 64) and older adults (ages 65+). However, we indicate on the tables whether the association of that coefficient differed by age group. We used these age groups for comparability with past research (Okoro et al., 2016), due to aging and the life course research indicating that there are important differences between working age and older adults (Markides and Rote, 2019), (Okoro et al., 2016), and because patterns of health by our main factors of interest indicate a difference for these groups.

For our analyses of the data, we presented the means and percentages of the study variables by race/ethnicity/nativity and for the analytic sample for working age adults and older adults separately. We utilized bivariate statistics to examine whether the unadjusted patterns of fair/poor SRH and the study variables differed by race/ethnicity/nativity. We then used fit multivariable logistic regression to examine disparities in fair/poor SRH by race/ethnicity/nativity variable and ADL disability net of the covariates. Next, we included an interaction term between ADL disability and race/ethnicity/nativity to examine whether disparities in reporting fair/poor SRH by ADL disability vary across race/ethnicity/nativity groups. We used the 'margins' command in Stata to calculate adjusted predicted prevalence by race/ethnicity/ nativity and ADL disability (Williams, 2012). Lastly, we analyze both age groups by including an interaction that indicates the age group and denotes in the tables whether the association for that coefficient differed significantly by age group. All analyses were conducted on Stata, release 17 and analyses were corrected for the complex survey design using the 'svy' command.

Results

Sample description

We calculated weighted descriptive statistics for respondents ages 25–64 in **Table 1** and respondents ages 65+ in **Table 2**. As anticipated, we observed higher prevalence of fair/poor SRH in the older age group than the working age group, though these patterns varied by race/ethnicity and nativity. For those ages 25–64 (**Table 1**), we found the highest and lowest prevalence of fair/poor SRH was among U.S.-born NH Blacks (11.5%) and U.S.-born NH Whites (5.4%), respectively. We found that U.S.-born respondents, regardless of race/ethnicity, had higher prevalence of ADL disability when compared to foreign-born respondents. However, ADL disability prevalence in this age group remained relatively rare, ranging from 2.6% (U.S.-born NH Blacks) to 0.4% (foreign-born NH Asians). For those ages 65+ (**Table 2**), we found a higher prevalence of fair/poor SRH among all race/ethnicity and nativity groups relative to U.S.-born NH Whites (12.1%); the highest prevalence was among foreign-born Hispanics (29.9%). Unlike those ages 25–64, we found higher prevalence of ADL disability among all race/ethnicity and nativity groups compared to U.S.-born NH Whites.

Multivariable analyses

Next, we examined the relationship between race/ethnicity/nativity, ADL disability, and SRH using multivariable logistic regression, accounting for age, gender, marital status, education, region of residence, home ownership, and health insurance type. We fit weighted logistic regression models separately for age groups 25–64 and 65+ (**Table 3**). Examining race/ethnic/nativity groups among those age 25 to 64 (**Table 3 – Model 1**), we found that U.S.-born NH Blacks had the highest likelihood of fair/poor SRH (OR: 1.64; 95% CI: 1.56, 1.73), followed by U.S.-born Hispanics (OR: 1.48; 95% CI: 1.39, 1.58). Foreign-born NH Asians and Hispanics had a similar likelihood of having reporting fair/poor SRH – (OR: 1.25; 95% CI: 1.15, 1.36) and (OR: 1.27; 95% CI: 1.20, 1.35), respectively. Having an ADL disability drastically increased the likelihood of fair/poor SRH (OR: 35.9; 95% CI: 32.9, 39.1).

In **Table 3 - Model 2**, we included an interaction between ADL disability and race/ethnicity and nativity variables. The inclusion of the interaction significantly improved model fit ($F = 3.75$; $p = 0.005$; $df= 7$, 907). For ease of interpretability, these estimates are presented as predicted probabilities in **Fig. 1**. For respondents with no ADL disability, we observed a pattern that is consistent to what was previously found among the entire sample. U.S.-born NH Blacks had the highest probability of fair/poor SRH (0.10; 95% CI: 0.09, 0.010), followed by U.S.-born Hispanics (0.09; 95% CI: 0.08, 0.09), then foreign-born Hispanics (0.08; 95% CI: 0.07, 0.08); foreign-born NH Blacks reported the lowest prevalence of fair/poor SRH (0.06; 95% CI: 0.05, 0.06) Within race/ethnicity, we find that foreign-born respondents have better health (i.e., Hispanics and NH Blacks) or similar health (i.e., NH Whites and NH

Table 1

Weighted Percentages and Means of Analysis Variable by Race/Ethnicity/Nativity for Those Ages 25–64, NHIS 2010–2018[1].

	U.S.-Born NH White	Foreign-Born NH White		U.S.-Born Hispanic		Foreign-Born Hispanic		U.S.-Born NH Black		Foreign-Born NH Black		U.S.-Born NH Asian		Foreign-Born NH Asian		Total
Poor/Fair SRH	5.38	5.04		8.31	*	10.52	*	11.55	*	5.37		4.20	*	5.34		6.68
Any ADL Disability	1.20	0.91	*	1.62	*	0.68	*	2.58	*	0.59	*	0.76	*	0.35	*	1.24
Male	49.57	49.98		49.44		51.45	*	44.67	*	48.38	*	50.33		46.00	*	49.10
Married	66.96	74.65	*	52.92	*	68.24	*	39.59	*	60.56	*	53.17	*	79.25	*	64.22
Education															
Less than HS	5.08	5.45		12.13	*	45.63	*	10.80	*	10.35	*	2.24	*	8.36	*	10.64
High school/GED	23.79	18.78	*	29.46	*	25.17	*	30.12	*	25.19		13.36	*	15.84	*	24.20
Some college	30.67	22.83	*	35.28	*	16.33	*	34.86	*	29.04	*	23.51	*	16.45	*	28.69
Bachelor's or more	40.46	52.93	*	23.13	*	12.86	*	24.23	*	35.43	*	60.89	*	59.35	*	36.47
Region															
Northeast	18.99	27.82	*	11.49	*	14.85	*	12.76	*	35.82	*	16.94		21.25	*	18.22
Midwest	28.35	16.82	*	9.47	*	9.08	*	17.14	*	11.86	*	10.41	*	13.34	*	22.30
South	33.62	27.05	*	35.37		38.86	*	61.80	*	43.53	*	21.54	*	24.71	*	36.36
West	19.04	28.30	*	43.67	*	37.22	*	8.30	*	8.79	*	51.11	*	40.70	*	23.11
Owns home	76.68	65.83	*	57.73	*	46.60	*	48.82	*	47.20	*	68.04	*	61.32	*	67.73
Insured	89.33	85.74	*	81.64	*	56.90	*	81.22	*	79.76	*	91.65	*	87.98	*	84.26
Age[2]	44.70	44.66		38.73	*	42.06	*	42.57	*	42.91	*	38.83	*	43.11	*	43.66
	0.05	0.13		0.11		0.10		0.10		0.18		0.26		0.15		0.04
N	211,398	11,981		27,193		50,381		39,115		6913		5194		22,982		375,157

[1] *Indicates significant difference between that group and U.S.-born NH Whites, $p < 0.05$. All analyses correct for survey design.
[2] Age is a continuous variable. The standard error is listed below the mean.

Table 2

Weighted Percentages and Means of Analysis Variable by Race/Ethnicity/Nativity for Those Ages 65+, NHIS 2010–2018[1].

	U.S.-Born NH White	Foreign-Born NH White		U.S.-Born Hispanic		Foreign-Born Hispanic		U.S.-Born NH Black		Foreign-Born NH Black		U.S.-Born NH Asian		Foreign-Born NH Asian		Total
Poor/Fair SRH	12.08	18.03	*	21.32	*	29.86	*	26.08	*	23.59	*	14.00		21.29	*	15.13
Any ADL Disability	6.69	10.67	*	10.24	*	11.55	*	13.31	*	8.83	*	7.17		9.73	*	7.90
Male	46.00	43.14	*	45.93		43.15	*	40.16	*	44.37		46.79		44.55	*	45.16
Married	63.81	61.87		58.48	*	56.03	*	42.42	*	52.02	*	63.18		69.54	*	61.58
Education															
Less than HS	10.83	17.56	*	31.37	*	54.92	*	26.00	*	29.82	*	10.91		21.95	*	15.82
High school/GED	31.27	24.50	*	29.30		20.01	*	30.73		28.37		28.62		21.00	*	29.78
Some college	26.47	24.03	*	24.35		12.83	*	25.12	*	16.51	*	26.04		12.09	*	24.91
Bachelor's or more	31.43	33.91	*	14.99	*	12.25	*	18.15	*	25.29	*	34.42		44.95	*	29.49
Region															
Northeast	19.70	32.94	*	3.52	*	19.82		13.21	*	47.28	*	13.47	*	21.74	*	19.61
Midwest	26.35	15.93	*	7.29	*	5.24	*	18.83	*	5.23	*	8.23	*	9.14	*	22.63
South	35.19	23.29	*	36.41		43.02	*	59.62	*	40.68		21.63	*	18.31	*	36.15
West	18.76	27.84	*	52.78	*	31.92	*	8.33	*	6.81	*	56.67	*	50.82	*	21.61
Owns home	88.94	79.01	*	80.76	*	65.02	*	72.96	*	66.14	*	87.37		71.49	*	84.86
Insured	99.15	97.39	*	98.47	*	92.32	*	98.14		93.30	*	98.78		96.01	*	98.42
Age[2]	73.34	74.04		72.70		72.83		72.87	*	72.47	*	73.99	*	72.42	*	73.25
	0.04	0.13		0.14		0.11		0.09		0.26		0.31		0.14		0.03
N	61,034	3388		2606		5490		7695		812		1036		3792		85,853

[1] *Indicates significant difference between that group and U.S.-Born NH Whites, $p < 0.05$. All analyses correct for survey design.
[2] Age is a continuous variable. The standard error is listed below the mean.

Asians) compared to their U.S.-born counterparts. However, a different pattern emerged among those reporting ADL disability. Among those reporting any ADL disability, foreign-born Hispanics had the highest probability of having poor/fair SRH (0.76; 95% CI: 0.69, 0.083), followed by foreign-born NH Whites (0.74; 95% CI: 0.64, 0.84). U.S.-born Hispanics, U.S.-born NH Blacks, and U.S.-born Asians had relatively lower chances of fair/poor SRH compared to the other groups. Within race/ethnicity, we found that foreign-born respondents tend to have *worse* SRH compared to their U.S.-born counterparts, except for NH Blacks. Additionally, according to the interactions, the impact of an ADL disability on health was significantly greater for foreign-born Hispanics and significantly less for U.S.-born Hispanics and U.S.-born NH Blacks, compared to U.S.-born NH Whites.

Table 4 presents the logistic regression estimates predicting fair/poor SRH for respondents ages 65+ which presented a pattern different than respondents ages 25–64. **Model 1** controlled for the same covariates listed above. We found that all racial/ethnicity nativity groups had a greater likelihood to have fair/poor SRH compared to U.S.-born

NH Whites, except for U.S.-born NH Asians. Unlike those ages 25–64, we found that older foreign-born Hispanics and foreign-born NH Blacks had the highest likelihood of fair/poor SRH.

Model 2 included the interactions between ADL disability and race/ethnicity and nativity variables. Consistent with the working age group, the interaction significantly improved model fit ($F = 3.78$; $p = 0.005$; df= 7, 907). These estimates are presented as predicted probabilities in Fig. 2. Among those with no ADL disability, we found that foreign-born Hispanics and foreign-born NH Blacks had the highest probability of fair/poor SRH (0.15; 95% CI: 0.13, 0.16 and 0.15; 95% CI: 0.12, 0.18, respectively). Within race/ethnicity groups, we consistently found that foreign-born respondents reported worse health than their U.S.-born counterparts. Among those with an ADL disability, the predicted probability of fair/poor SRH was highest among foreign-born NH Asians (0.78; 95% CI: 0.73, 0.84) and lowest among foreign-born NH Blacks (0.57; 95% CI: 0.42, 0.71). The predicted probability of fair/poor SRH was similar among foreign-born Hispanics (0.65; 95% CI: 0.60, 0.71), U.S.-born Hispanics (0.67; 95% CI: 0.58, 0.75) and U.S.-born NH Blacks

Table 3

Weighted Logistic Regression Predicting Poor/Fair Self-Rated Health for Those Ages 25–64, NHIS 2010–2018 ($N = 375,157$).

	Model 1				Model 2			
	Odds ratio		95% CI		Odds ratio		95% CI	
Race/Ethnicity/Nativity (U.S.-Born NH White)								
Foreign-Born NH White	1.05		0.93	1.17	1.03		0.91	1.16
U.S.-Born Hispanic	1.48	***	1.39	1.58	1.53	***	1.43	1.63
Foreign-Born Hispanic	1.27	***	1.20	1.35	1.27	***	1.20	1.35
U.S.-Born NH Black	1.64	***	1.56	1.73	1.67	***	1.59	1.76
Foreign-Born NH Black	0.90		0.78	1.04	0.91		0.79	1.05
U.S.-Born NH Asian	1.19		0.99	1.43	1.21	*	1.00	1.47
Foreign-Born NH Asian	1.25	***	1.15	1.36	1.26	***	1.16	1.37
Any ADL Disability	35.88	***	32.92	39.11	39.64	***	35.41	44.37
X Foreign-Born NH White					1.74		0.93	3.28
X U.S.-Born Hispanic					0.50	***	0.37	0.67
X Foreign-Born Hispanic					1.60	*	1.02	2.50
X U.S.-Born NH Black					0.67	***	0.53	0.84
X Foreign-Born NH Black					0.77		0.29	2.04
X U.S.-Born NH Asian					0.63		0.24	1.64
X Foreign-Born NH Asian					1.01		0.57	1.78
Male	0.88	***	0.85	0.90	0.88	***	0.85	0.90
Married	0.79	***	0.76	0.82	0.79	***	0.76	0.82
Education (Less than high school)								
High school/GED	0.59	***	0.56	0.62	0.59	***	0.56	0.62
Some college	0.44	***	0.42	0.46	0.44	***	0.42	0.46
Bachelor's degree or more	0.21	***	0.19	0.22	0.21	***	0.19	0.22
	Model 1				Model 2			
	Odds ratio		95% CI		Odds ratio		95% CI	
Region (Northeast)								
Midwest	1.15	***	1.08	1.22	1.15	***	1.08	1.22
South	1.24	***	1.17	1.31	1.23	***	1.17	1.31
West	1.13	***	1.06	1.20	1.13	***	1.06	1.20
Owns home	0.64	***	0.62	0.67	0.64	***	0.62	0.67
Insurance	0.81	***	0.78	0.85	0.81	***	0.78	0.85
Age	1.04	***	1.04	1.04	1.04	***	1.04	1.04
Year (2010)								
2011	1.00		0.94	1.07	1.00		0.94	1.07
2012	1.01		0.95	1.09	1.02		0.95	1.09
2013	1.01		0.94	1.09	1.01		0.94	1.09
2014	0.94		0.88	1.01	0.94		0.88	1.01
2015	1.03		0.96	1.11	1.03		0.96	1.11
2016	0.95		0.88	1.03	0.95		0.88	1.03
2017	0.98		0.90	1.06	0.98		0.90	1.06
2018	0.94		0.87	1.01	0.94		0.87	1.01

* $p<0.05$.
*** $p<0.001$.

(0.67; 95% CI: 0.62, 0.71). Additionally, according to the interactions, the impact of an ADL disability on health was significantly less for foreign-born Hispanics, foreign-born NH Blacks, and U.S.-born NH Blacks when compared to U.S.-born NH Whites.

Discussion

We observed a pattern similar to previous literature that finds, among respondents ages 25–64, foreign-born individuals tend to have a health advantage over their U.S.-born counterparts (Markides and Rote, 2019). However, when considering reports of ADL disability, which is rare among working age adults, this pattern differed. Among respondents ages 25–64, reports of ADL disability appear more impactful to the SRH of foreign-born Hispanics. This results in foreign-born Hispanic respondents with an ADL disability being especially at considerable risk for fair/poor SRH, particularly at working ages. However, like previous studies, we observed a different association at older ages (Melvin et al., 2014), (Sheftel and Heiland, 2018), (Levchenko, 2021), (Hayward et al., 2014); among foreign-born respondents ages 65+, especially NH Blacks and Hispanics, the impact of reporting an ADL disability on SRH was significantly less than it was for U.S-born NH

Whites. That is, despite the worse health of the older foreign-born respondents in general, in terms of SRH and ADL disability prevalence, having an ADL disability was not as negatively impactful for health as it was for U.S.-born White respondents. While health selection is indicated as the primary force behind the "healthy immigrant effect", ethnic enclaves and social support have also received some empirical support as explanations for the "healthy immigrant effect" (Markides and Rote, 2019). Social support may be more readily available to older immigrants, especially as many immigrants come from origin countries that stress the importance of familism (Diederich et al., 2022). This may be particularly true for older immigrants with disabilities.

The racial, ethnic, and nativity differences presented here are in line with prior literature using NHIS (Melvin et al., 2014), (Hayward et al., 2014). We contribute to this research by analyzing more recent years and considering the impact of ADL disability. In more detail, similar to these other NHIS studies, we found that compared to U.S.-born NH Whites, foreign-born NH Blacks report greater rates of disability in older ages (Melvin et al., 2014), while older foreign-born Hispanics report exceptionally higher rates of disability (Sheftel and Heiland, 2018), (Levchenko, 2021), (Hayward et al., 2014). Therefore, the decreased impact that ADL disability has on the SRH of older foreign-born NH
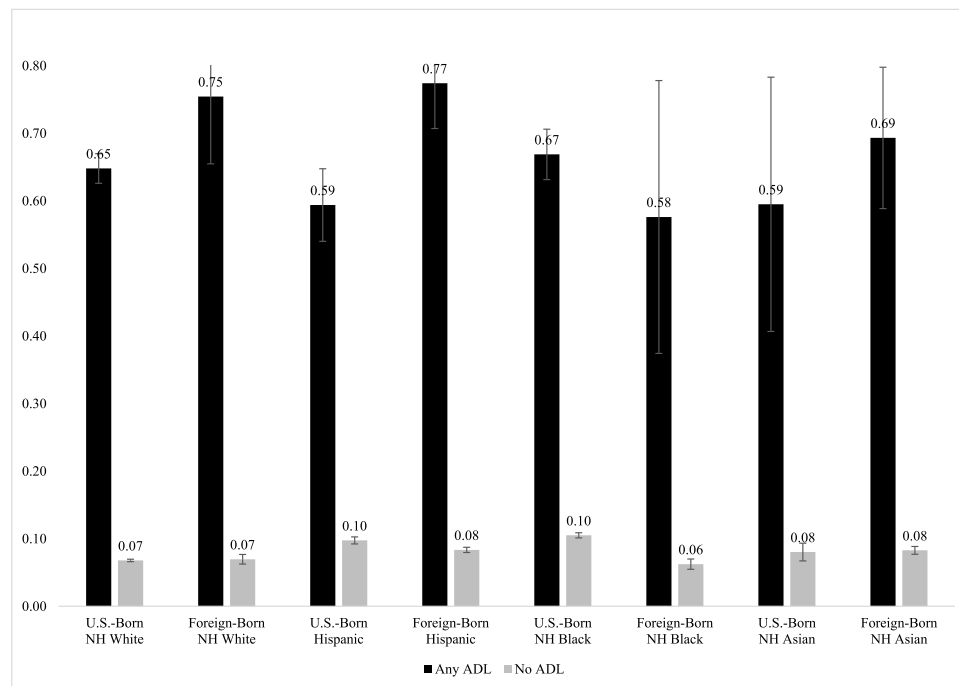
Fig. 1. Adjusted predicted probability of poor/fair self-rated health by race/ethnicity, nativity, and any ADL among those ages 25–64.

Blacks might be the result of acquiring a disability later in life. In addition, protracted disability among foreign-born Hispanics (Hayward et al., 2014) might allow this population to acclimate to impairment earlier in adulthood. This is in line with researchers (Wolf et al., 2008) who found that the impact of disability on SRH was half as damaging for U.S.-born Hispanics when compared to U.S.-born NH Whites.

We speculate that some older foreign-born groups may have access to resources that minimize the negative impact that ADL disability has on health. For example, stronger familial or community ties may be especially important to older racialized minorities and immigrants (Cornwell and Goldman, 2020), (Diederich et al., 2022). However, this does not account for the particularly strong impact that ADL disability had on SRH among older foreign-born NH Asians. This might be due to the diverse language profile of Asian immigrants which can lead to difficulties navigating health care, a common issue among immigrants (Castañeda et al., 2015), (Angel et al., 2014), (Bustamante et al., 2021), (Fahmy and Testa, 2021). Working age adults with disabilities are less likely to have access to health care than middle-age and older adults with disabilities (Okoro et al., 2016). Our research suggests that this may be even worse for foreign-born Hispanics, as having an ADL disability in working ages is particularly impactful to health. This may be especially true as working age Hispanic immigrants are normally thought as having a health advantage. Future research should collect longitudinal data and explore the role language proficiency plays when examining this relationship. Such inquiry may shed light on some of the patterns of SRH among immigrants with disabilities.

The "healthy immigrant effect" explanations have found the most support with health selection among those who migrated during adulthood and exposure to the negative health environment found in the U.S. (Markides and Rote, 2019). We did not examine age at arrival or duration in the U.S., which we believe that would be informative, though our results are consistent with this explanation. Older foreign-born respondents either had more exposure to the U.S. environment or did not experience the health selection documented for working age adults. Among working age foreign-born respondents, the particularly negative impact that ADL disability had on health could be explained by lack of health selection found for working age immigrants, especially if they migrated after their disability was acquired. It is also

possible that these immigrants were reuniting with family via chain migration (Morey et al., 2020). Additionally, if ADL disability was acquired after migration to the U.S., there can be a wide range of challenges; specifically, navigating the particularly complicated U.S. health care system (Hill et al., 2021), discrimination brought on by the double disadvantage of immigrant status (Nguyen et al., 2021) and ADL disability, and the economic burden that ADL disability can bring to an already economically vulnerable population. These factors may help explain why ADL disability was especially impactful for health among working age foreign-born respondents.

As for the older foreign-born respondents in our sample, we found that being non-disabled did not translate to notably lower reports of fair/poor SRH, as compared to their U.S.-born peers. This finding is arguably the result of marginalization-related diminished returns (MDRs) which is when disadvantaged groups do not reap the same health benefits from upward mobility as advantaged groups (S. Assari et al., 2020; Assari, 2020; S. Assari et al., 2020). Specifically, research finds that immigrants who achieve educational or income mobility are more likely to report worse SRH (S. Assari et al., 2020), mental well-being (Assari, 2020), and rates of smoking (S. Assari et al., 2020) than their U.S.-born peers. In the case of our study, reaching old age without acquiring disability is a marker of social advantage but does not draw a SRH advantage for older Hispanic immigrants as well as NH Blacks from both age and nativity groups. Our findings contribute to MDRs research by demonstrating that immigrant and disability status provide their own diminished health returns among racially/ethnically minoritized populations.

As increasingly diverse American populations continue to age and experience disability, it is critically important to understand the implications of disability for health. While older immigrants were once rare, recent estimates indicate an increase in the number of people migrating to the U.S. later in life; specifically, the share of immigrants ages 55 and older arriving to the U.S. has more than doubled between 2000 (5%) and 2019 (11%) (Camarota and Ziegler, 2021); additionally, the proportion of newly arrived immigrants ages 65+ has tripled during that same time frame from 2% to 6%. In addition to new arrivals, the current immigrant population is aging. Specifically, the share of immigrants ages 65+ in the U.S. is expected to rise from 14% in 2014 to 30% in 2050 (Colby and

Table 4

Weighted Logistic Regression Predicting Poor/Fair Self-Rated Health for Those Ages 65+, NHIS 2010–2018 (*N* = 85,853).

	Model 1				Model 2			
	Odds ratio		95% CI		Odds ratio		95% CI	
Race/Ethnicity/Nativity (U.S.-Born NH White)								
Foreign-Born NH White	1.41	***	1.22	1.64	1.41	***	1.21	1.63
U.S.-Born Hispanic	1.50	***	1.32	1.71	1.52	***	1.32	1.76
Foreign-Born Hispanic	2.06	***	1.87	2.26	2.17	***	1.97	2.40
U.S.-Born NH Black	1.90	***	1.75	2.07	2.01	***	1.84	2.19
Foreign-Born NH Black	1.96	***	1.55	2.49	2.17	***	1.71	2.76
U.S.-Born NH Asian	1.21		0.96	1.53	1.22		0.94	1.57
Foreign-Born NH Asian	1.94	***	1.71	2.20	1.88	***	1.64	2.16
Any ADL Disability	19.35	***	17.89	20.93	20.69	***	18.80	22.77
X Foreign-Born NH White					1.02		0.72	1.45
X U.S.-Born Hispanic					0.93		0.60	1.44
X Foreign-Born Hispanic					0.61	***	0.48	0.77
X U.S.-Born NH Black					0.70	***	0.58	0.85
X Foreign-Born NH Black					0.41	*	0.20	0.82
X U.S.-Born NH Asian					1.00		0.54	1.85
X Foreign-Born NH Asian					1.39		0.98	1.96
Male	1.23	***	1.18	1.29	1.23	***	1.17	1.29
Married	1.10	**	1.04	1.17	1.10	**	1.04	1.17
Education (Less than high school)								
High school/GED	0.62	***	0.58	0.66	0.62	***	0.58	0.66
Some college	0.47	***	0.44	0.51	0.47	***	0.44	0.51
Bachelor's degree or more	0.27	***	0.25	0.30	0.28	***	0.25	0.30
Region (Northeast)								
Midwest	1.03		0.93	1.12	1.03		0.93	1.13
South	1.25	***	1.15	1.36	1.25	***	1.15	1.36
West	1.07		0.98	1.17	1.07		0.97	1.17
Owns home	0.72	***	0.67	0.78	0.73	***	0.67	0.78
Insurance	0.92		0.77	1.10	0.93		0.78	1.12
Age	1.01	***	1.00	1.01	1.01	***	1.00	1.01
Year (2010)								
2011	1.03		0.92	1.15	1.03		0.92	1.15
2012	0.91		0.81	1.02	0.91		0.81	1.02
2013	0.86	*	0.77	0.97	0.86	*	0.77	0.97
2014	0.83	**	0.74	0.94	0.83	**	0.74	0.94
2015	0.87	*	0.78	0.97	0.87	*	0.78	0.97
2016	0.86	*	0.77	0.97	0.86	*	0.77	0.97
2017	0.85	**	0.75	0.96	0.85	**	0.75	0.96
2018	0.92		0.82	1.04	0.92		0.82	1.04

* $p<0.05$.
** $p<0.01$.
*** $p<0.001$.

Ortman, 2015). Also, migration from Mexico, the largest immigrant country of origin in the U.S., peaked in the 1990s (Passel et al., 2012); therefore, those immigrants who arrived in their 30s and 40s are currently approaching older adulthood. The unprecedented rise of aging immigrants in the U.S. cultivates new concerns regarding healthy aging and its relationship with disability across adulthood.

Limitations

Although this is the first study to use nationally representative data to examine fair/poor SRH across race/ethnicity/nativity groups with/out ADL disability, it is not without its limitations. First, we included eight specific race/ethnicity/nativity groups due to the literature in immigrant health research indicating that the impact of nativity on health varies by race/ethnicity. However, research documents that there is variation in health even among the subgroups examined here (Elo et al., 2011), (Huang et al., 2011). Specifically, 'Hispanic' is a panethnic term that aims to be nationally representative but often undermines the cultural nuances of different Latin American ethnicities. For example, self-reported cognitive impairment has been found to be noticeably different between those with Cuban, Puerto Rican, and Mexican heritage (Garcia et al., 2021). Thus, future research would benefit from

highlighting more specific NH Asian, NH Black, and Hispanic, and NH White immigrant subgroups. Second, SRH is a subjective measure that can be interpreted different ways (Bjorner et al., 2005), especially between foreign- and U.S.-born individuals (Maskileyson et al., 2021). Therefore, future research would improve upon ours by incorporating objective health measures. Third, data were collected from a secondary cross-sectional dataset, so we were limited to the variables collected by primary researchers and could not examine longitudinal associations such as how health changed over time or whether how long, or when, the ADL disability impacted health.

Conclusions

Our research contributes to research regarding the "healthy immigrant effect" (Markides and Rote, 2019) by systematically documenting that the implications of ADL disability for SRH. Specifically, we found that ADL disability was more impactful to the SRH of working age, rather than older, foreign-born respondents, especially Hispanics and NH Whites. We also observed that reporting ADL disability had a smaller effect on the health of older foreign-born groups, particularly NH Blacks and Hispanics. We speculate that limited access to U.S. health care can be particularly damaging to the health of working age immigrants with
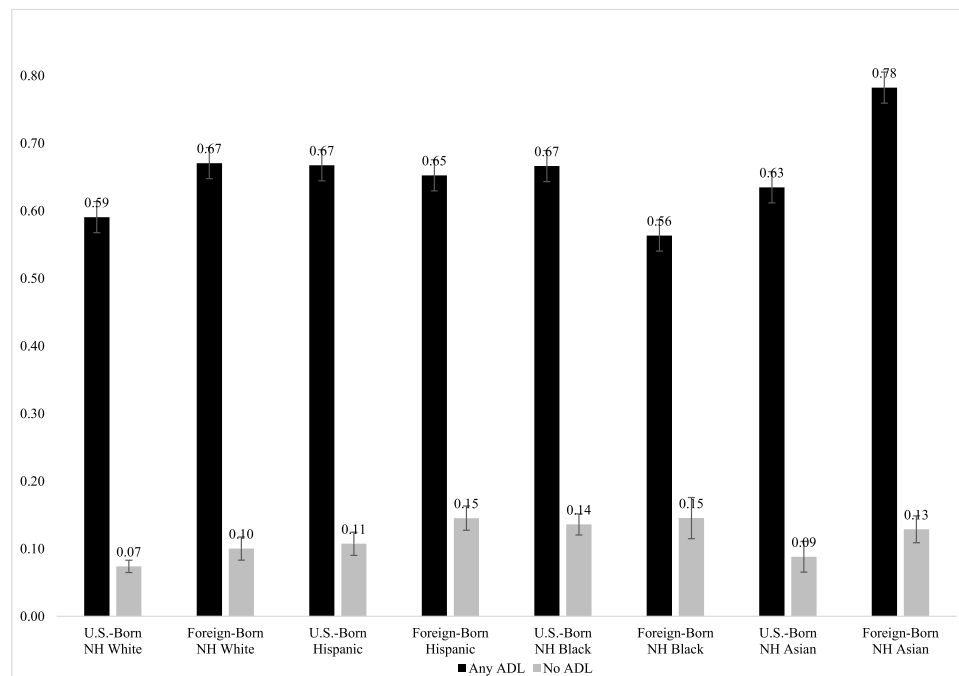
Fig. 2. Adjusted predicted probability of poor/fair self-rated health by race/ethnicity, nativity, and any ADL among those ages 65+.

disabilities, while familism provide health advantages to older immigrants with disabilities. Broadly, these results indicate that researchers, clinicians, and policymakers should holistically consider race, ethnicity, and nativity when investigating the implications of ADL disability on health.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.jmh.2022.100112.

References

Melvin, J., Hummer, R., Elo, I., Mehta, N., 2014. Age patterns of racial/ethnic/nativity differences in disability and physical functioning in the United States. Demogr. Res. 31, 497–510. https://doi.org/10.4054/DemRes.2014.31.17.

Infurna, F.J., Wiest, M., 2018. The effect of disability onset across the adult life span. J. Gerontol. Ser. B 73 (5), 755–766. https://doi.org/10.1093/geronb/gbw055.

Cantu, P.A., Hayward, M.D., Hummer, R.A., Chiu, C.-.T., 2013. New estimates of racial/ethnic differences in life expectancy with chronic morbidity and functional loss: evidence from the National Interview Survey. J. Cross-Cult. Gerontol. 28 (3), 283–297. https://doi.org/10.1007/s10823-013-9206-5.

Castañeda, H., Holmes, S.M., Madrigal, D.S., Young, M.-E.D., Beyeler, N., Quesada, J., 2015. Immigration as a social determinant of health. Annu. Rev. Public Health 36 (1), 375–392. https://doi.org/10.1146/annurev-publhealth-032013-182419.

S.L. Colby, J.M. Ortman, Projections of the Size and Composition of the U.S. Population: 2014 to 2060, United States Census Bureau, 2015. https://mronline.org/wp-content/uploads/2019/08/p25-1143.pdf (accessed 29 December 2021).

Guadamuz, J.S., Kapoor, K., Lazo, M., Eleazar, A., Yahya, T., Kanaya, A.M., Cainzos-Achirica, M., Bilal, U., 2021. Understanding immigration as a social determinant of health: cardiovascular disease in Hispanics/Latinos and South Asians in the United States. Curr. Atheroscler. Rep. 23 (6), 25. https://doi.org/10.1007/s11883-021-00920-9.

Pruitt, S.L., Tiro, J.A., Xuan, L., Lee, S.J.C., 2016. Hispanic and immigrant paradoxes in U.S. Breast cancer mortality: impact of neighborhood poverty and Hispanic density. Int. J. Environ. Res. Public. Health 13 (12), 1238. https://doi.org/10.3390/ijerph13121238.

Singh, G.K., Rodriguez-Lainz, A., Kogan, M.D., 2013. Immigrant health inequalities in the United States: use of eight major national data systems. Sci. World J. 2013, 1–21. https://doi.org/10.1155/2013/512313.

Markides, K.S., Rote, S., 2019. The healthy immigrant effect and aging in the United States and other Western countries. The Gerontologist 59 (2), 205–214. https://doi.org/10.1093/geront/gny136.

Sheftel, M.G., Heiland, F.W., 2018. Disability crossover: is there a Hispanic immigrant health advantage that reverses from working to old age? Demogr. Res 39 (7), 209–250. https://doi.org/10.4054/DemRes.2018.39.7.

Levchenko, Y., 2021. Aging into disadvantage: disability crossover among Mexican immigrants in America. Soc. Sci. Med. 285, 114290 https://doi.org/10.1016/j.socscimed.2021.114290.

Boen, C.E., Hummer, R.A., 2019. Longer—But harder—Lives?: the Hispanic health paradox and the social determinants of racial, ethnic, and immigrant–native health disparities from midlife through late life. J. Health Soc. Behav. 60 (4), 434–452. https://doi.org/10.1177/0022146519884538.

Assari, S., Perez, M.U., Williams, N.R., Johnson, N., Carrillo, E., Garcia, L., Hollis, X.T., 2020a. Education level and self-rated health in the United States: immigrants' diminished returns. Int. J. Travel Med. Glob. Health 8 (3), 116–123. https://doi.org/10.34172/ijtmgh.2020.20.

Assari, S., 2020. Income and mental well-being of middle-aged and older Americans: immigrants' diminished returns. Int. J. Travel Med. Glob. Health 8 (1), 37–43. https://doi.org/10.34172/ijtmgh.2020.06.

Assari, S., Cobb, S., Cuevas, A.G., Bazargan, M., 2020b. Diminished health returns of educational attainment among immigrant adults in the United States. Front. Psychiatry 11, 535624. https://doi.org/10.3389/fpsyt.2020.535624.

Hayward, M.D., Hummer, R.A., Chiu, C.-.T., González-González, C., Wong, R., 2014. Does the Hispanic paradox in U.S. adult mortality extend to disability? Popul. Res. Policy Rev. 33 (1), 81–96. https://doi.org/10.1007/s11113-013-9312-7.

Mutchler, J.E., Prakash, A., Burr, J.A., 2007. The demography of disability and the effects of immigrant history: older Asians in the United States. Demography 44 (2), 251–263. https://doi.org/10.1353/dem.2007.0015.

Courtney-Long, E.A., Romano, S.D., Carroll, D.D., Fox, M.H., 2017. Socioeconomic factors at the intersection of race and ethnicity influencing health risks for people with disabilities. J. Racial Ethn. Health Disparities 4 (2), 213–222. https://doi.org/10.1007/s40615-016-0220-5.

Horner-Johnson, W., Fujiura, G.T., Goode, T.D., 2014. Promoting a new research agenda: health disparities research at the intersection of disability, race, and ethnicity. Med. Care 52 (10), S1–S2. https://doi.org/10.1097/MLR.0000000000000220.

Warner, D.F., Brown, T.H., 2011. Understanding how race/ethnicity and gender define age-trajectories of disability: an intersectionality approach. Soc. Sci. Med. 72 (8), 1236–1248. https://doi.org/10.1016/j.socscimed.2011.02.034.

Wolf, L.A., Armour, B.S., Campbell, V.A., 2008. Racial/ethnic disparities in self-rated health status among adults with and without disabilities–United States, 2004-2006 Morb. and Mortal. Wkly Rep. 57 (39), 1069–1073.

Idler, E.L., Benyamini, Y., 1997. Self-rated health and mortality: a review of twenty-seven community studies. J. Health Soc. Behav. 38 (1), 21–37. https://doi.org/10.2307/2955359.

Drum, C.E., Horner-Johnson, W., Krahn, G.L., 2008. Self-rated health and healthy days: examining the 'disability paradox,' Disabil. Health J 1 (2), 71–78. https://doi.org/10.1016/j.dhjo.2008.01.002.

Bjorner, J.B., Fayer, P., Idler, E., 2005. Self-rated health. Eds. In: Fayers, P., Hays, R. (Eds.), Assessing Quality of Life in Clinical trials: Methods and Practice, 2nd ed. Oxford University Press, New York, pp. 309–323.

Maskileyson, D., Seddig, D., Davidov, E., 2021. The comparability of perceived physical and mental health measures across immigrants and natives in the United States. Demography 58 (4), 1423–1443. https://doi.org/10.1215/00703370-9304855.

Ichou, M., Wallace, M., 2019. The healthy immigrant effect: the role of educational selectivity in the good health of migrants. Demogr. Res. 40, 61–94. https://doi.org/10.4054/DemRes.2019.40.4.

Angel, J.L., Rote, S.M., Brown, D.C., Angel, R.J., Markides, K.S., 2014. Nativity status and sources of care assistance among elderly Mexican-origin adults. J. Cross-Cult. Gerontol. 29 (3), 243–258. https://doi.org/10.1007/s10823-014-9234-9.

Ghimire, D., Bhandari, P., 2020. Study of migration and later life health in Nepal. J. Migr. Health 1-2, 100018. https://doi.org/10.1016/j.jmh.2020.100018.

Escobar-Agreda, S., Taype-Rondan, A., Miranda, J.J., 2021. Association between acculturation surrogates and alcohol consumption in rural-to-urban migrants: the PERU MIGRANT study. J. Migr. Health 3, 100015. https://doi.org/10.1016/j.jmh.2020.100015.

Rivera-Navarro, J., Brey, E., Franco, M., 2020. Immigration and use of public spaces and food stores in a large city: a qualitative study on urban health inequalities. J. Migr. Health 1–2. https://doi.org/10.1016/j.jmh.2020.100019.

Markides, K.S., Gerst, K., 2011. Immigration, aging, and health in the United States. In: Settersten, R.A., Angel, J.L. (Eds.), Handbook of Sociology of Aging. Springer, New York, pp. 103–116.

Nguyen, T., Cho, Y.J., Jang, Y., 2021. Perceived discrimination, psychosocial resources, and mental distress in Vietnamese Americans. J. Migr. Health 3, 100039. https://doi.org/10.1016/j.jmh.2021.100039.

Okoro, C.A., Hollis, N.D., Cyrus, A.C., Griffin-Blake, S., 2016. Prevalence of disabilities and health care access by disability status and type among adults — United States. Morb. Mortal. Wkly. Rep. 67 (32), 882. https://doi.org/10.15585/mmwr.mm6732a3, 2018https://doi.org/.

Hill, J., Rodriguez, D.X., McDaniel, P.N., 2021. Immigration status as a health care barrier in the USA during COVID-19. J. Migr. Health 4, 100036. https://doi.org/10.1016/j.jmh.2021.100036.

Villarreal, A., 2014. Explaining the decline in Mexico-U.S. migration: the effect of the great recession. Demography 51 (6), 2203–2228. https://doi.org/10.1007/s13524-014-0351-4.

Bustamante, A.V., Chen, J., Félix Beltrán, L., Ortega, A.N., 2021. Health policy challenges posed by shifting demographics and health trends among immigrants to the United States: study examines examine recent trends in immigrant health and health care after the great recession and the national implementation of the Affordable Care Act. Health Aff 40 (7), 1028–1037. https://doi.org/10.1377/hlthaff.2021.00037.

Fahmy, C., Testa, A., 2021. Stress among older adults with an incarcerated family member: testing the buffering model of social support. J. Gerontol. B. Psychol. Sci. Soc. Sci. 76 (10), 2057–2062. https://doi.org/10.1093/geronb/gbab117.

Cornwell, E.York, Goldman, A.W., 2020. Local ties in the social networks of older adults. J. Gerontol. B. Psychol. Sci. Soc. Sci. 76 (4), 790–800. https://doi.org/10.1093/geronb/gbaa033.

Brant, R., 1990. Assessing proportionality in the proportional odds model for ordinal logistic regression. Biometrics 46 (4), 1171–1178. https://doi.org/10.2307/2532457.

Read, J.G., Lynch, S.M., West, J.S., 2021. Disaggregating heterogeneity among non-Hispanic Whites: evidence and implications for U.S. racial/ethnic health disparities. Popul. Res. Policy Rev. 40 (1), 9–31. https://doi.org/10.1007/s11113-020-09632-5.

Garza, J.R., Glenn, B.A., Mistry, R.S., Ponce, N.A., Zimmerman, F.J., 2017. Subjective social status and self-reported health among US-born and immigrant Latinos. J. Immigr. Minor. Health 19 (1), 108–119. https://doi.org/10.1007/s10903-016-0346-x.

Flippen, C.A., Farrell-Bryan, D., 2021. New destinations and the changing geography of immigrant incorporation. Annu. Rev. Sociol. 47 (1), 479–500. https://doi.org/10.1146/annurev-soc-090320-100926.

Miranda, P.Y., Reyes, A., Hudson, D., Yao, N., Bleser, W.K., Snipes, A., BeLue, R., 2017. Reports of self-rated health by citizenship and homeownership. United States 2000–2010 Prev. Med. 100, 3–9. https://doi.org/10.1016/j.ypmed.2017.03.006.

Williams, R., 2012. Using the margins command to estimate and interpret adjusted predictions and marginal effects. Stata J. Promot. Commun. Stat. Stata 12 (2), 308–331. https://doi.org/10.1177/1536867X1201200209.

Diederich, F., König, H.-.H., Brettschneider, C., 2022. Cultural differences in the intended use of long-term care services in the United States: the role of family ties. J. Gerontol. Ser. B 77 (1), 201–2011. https://doi.org/10.1093/geronb/gbab035.

Morey, B.N., Bacong, A.M., Hing, A.K., de Castro, A.B., Gee, G.C., 2020. Heterogeneity in migrant health selection: the role of immigrant visas. J. Health Soc. Behav. 61 (3), 359–376. https://doi.org/10.1177/0022146520942896.

Camarota, S.A., Ziegler, K., 2021. Immigrants coming to America at older ages: a look at age at arrival among new immigrants, 2000 to 2019 Center for Immigration Studies. https://cis.org/Report/Immigrants-Coming-America-Older-Ages. accessed 7 January 2022).

Passel, J., Cohn, D., Gonzalez-Barrera, A., 2012. Net migration from Mexico falls to zero—And perhaps less. Pew Research Center. https://www.pewresearch.org/hispanic/2012/04/23/net-migration-from-mexico-falls-to-zero-and-perhaps-less/(accessed, 19 November 2021).

Elo, I.T., Mehta, N.K., Huang, C., 2011. Disability among native-born and foreign-born blacks in the United States. Demography 48 (1), 241–265. https://doi.org/10.1007/s13524-010-0008-x.

Huang, C., Mehta, N.K., Elo, I.T., Cunningham, S.A., Stephenson, R., Williamson, D.F., Venkat Narayan, K.M., 2011. Region of birth and disability among recent U.S. immigrants: evidence from the 2000 Census. Popul. Res. Policy Rev. 30 (3), 339–418. https://doi.org/10.1007/s11113-010-9194-x.

Garcia, M.A., Warner, D.F., García, C., Downer, B., Raji, M., 2021. Age patterns in self-reported cognitive impairment among older Latino subgroups and non-latino whites in the United States, 1997-2018: implications for public health policy. Innov. Aging 5 (4). https://doi.org/10.1093/geroni/igab039.