Immigrant (Self-Rated) Health Paradox? Ethnic Differences in the Effect of Nativity on Self-Rated Health

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This paper explores the differences in self-rated health between native-born and immigrants for several racial/ethnic groups in California. The previous studies have found that immigrants are generally healthier than native-born – the phenomenon known in the literature as "immigrant health paradox". It is also documented that this initial health advantage tends to erode with the time spent in a new country. However, most research uses native-born white as a reference category and includes dummies for other ethnic/race groups. The differences between native-born and foreign-born of the same ethnicity are rarely studied explicitly. American immigrant population is extremely diverse with respect to history of immigration, legal and socio-economic status, levels of education, and English-language proficiency. Despite general selectivity of migration, it is still plausible that some immigrant groups might be healthier than the others as the country of origin and the type of immigration (refugee, work-related, family reunification, etc) might matter. For example, immigrants from countries with higher life expectancy might be healthier than those from countries with lower life expectancy, and work-related migrants might be healthier than those who came through family reunification due to more extreme self-selection.

Literature review

Substantial research has shown that immigrant minority groups in the U.S. experience lower mortality rates in adulthood and higher life expectancy than do non-Hispanic whites (Abraido-Lanza et al. 1999; Sorlie et al. 1993). Many studies have also found that recently arrived immigrants are healthier than the average U.S.-born American (Jasso et al. 2004) but this initial health advantage tend to erode with the years spent in the U.S. (Uretsky and Mathiesen 2007). The mechanisms of the "negative acculturation" are not exactly clear. Lack of access to health care (especially among undocumented migrations) and adaptation of native-born behaviors are hypothesized to be responsible for diminishing immigrant health advantage (Abraído-Lanza, Chao and Flórez 2005). For example, upon arrival, immigrants' BMI is on average lower than an average BMI of native-born American, but the gap is closing considerably in 10-15 years (Antecol and Bedard 2006). The "salmon bias" explanation (Palloni and Arias 2004) proposes that lower mortality and better health of foreign-born population is the result of selective return migration of elders and those immigrants who experienced difficulties integrating into the new society. However, Hummer et al. (2007) found that return migration accounts only for a small share of Hispanic infant mortality advantage. Some authors argue that immigrant health paradox stems from underreporting of Hispanic origin on U.S. death certificates (Eschbach, Kuo and Goodwin 2006) or/and inconsistency in collecting data on ethnicity between the censuses (Smith and Bradshaw 2006). Because race and ethnicity are self-reported in most health-related surveys, misclassification seems to be less serious problem for morbidity.

With respect to morbidity the results are less conclusive. Some studies have found immigrant or ethnic advantage based on such indicators as functional limitations, and chronic conditions. Other studies concluded that Hispanics, on average, have poorer self-rated health (Angel, Buckley and Finch 2001; Bzostek, Goldman and Pebley 2007) than non-Hispanic whites and that there is no difference is self-rated health between Hispanic and non-Hispanic blacks (Borrell and Dallo 2008). Asian immigrants were also found more likely to rate their health negatively relative to their U.S.-born counterparts and to U.S.-born whites (Huh, Prause and Dooley 2008).

Research questions

This research compares self-rated health (SRH) of different immigrant groups in California. Specifically, I ask: 1) is there an immigrant health advantage with respect to self-rated health? 2) Is it the similar across different ethnic groups? 3) Does this health advantage disappear as the length of residence in the U.S. increases?

Hypotheses

According to "immigrant health paradox",

Hypothesis 1: immigrants will report better self-rated health than native-born regardless of the country of origin.

Hypothesis 2: Immigrant health advantage will become smaller with the years spent in the U.S.

Data and Method

I use the adult sample of the 2001, 2003, 2005, and 2007 waves of the California Health Interview Survey (CHIS). CHIS is a random-dial telephone survey of adults, adolescents and children conducted every two years on a wide range of health topics by the UCLA Center for Health Policy Research. The combined 2001-2007 sample provides data on 179,732 individuals. The main ethnic groups under analysis are non-Hispanic whites, non-Hispanic African-Americans, Mexicans, Japanese, Koreans, Vietnamese, Chinese, and Filipino. The weighted samples are representative of the California population.

The dependent variable is self-rated health, which was assessed with a single item that asks, "Would you say that in general your health is excellent, very good, good, fair, or poor?" Fair and poor ratings are combined into one category (coded 1) and excellent, very good, and good are combined into the reference category (coded 0).

The independent variables include several socio-demographic and behavioral characteristics typically thought to influence health. The main independent variable is place of birth of a respondent and the length of residence in the U.S. for foreign born respondents. The native-born of constitute the reference category, and the other categories of this variable: the foreign-born who are less than 5 years in the U.S., foreign-born who are between 5 and 15 years in the U.S., and foreign-born who spent more than 15 years in the U.S. Socio-economic status is measured by poverty level (4 category) and education (10 point scale). Age (in years), gender (female = 1), marital status (married = 1, not married = 0), and presence of children (have children = 1) are included as additional covariates. The other control variables are BMI, insurance coverage (uninsured = 1), smoking (current smoker = 1; former smoker=2) and binge drinking.

I use a series of nested logistic regression models to assess a) whether there are significant differences in self-rated health between different ethnic groups; b) the effect of the length of the residence in the U.S. net of the other control variables. Then I run the same model separately for each ethnic group to explore whether the effect of the duration of stay in the U.S. on self-rated health is similar across different immigrant groups. I also include a set of dummy variables for the survey year to account for data clustering.

Results

Most ethnic groups, on average, report having worse health than non-Hispanic whites. Only Japanese and South Asians tend to report better health compared to whites. However,

native born Chinese, Filipino, South Asian, and Japanese have better self-rated health compared to native-born white (Model 2); Mexicans, black and Vietnamese native-born's self-rated health is worse compared to native-born white, and Koreans are no different. The effect of the duration of stay in the U.S. does not support the "immigrant health paradox": immigrants tend to report worse SRH than native born and the effect seems to be increasing with the time spent in the U.S. However, the differences in SRH between ethnic group and the effect of the nativity/duration of stay begin to change when socio-demographic and behavioral characteristics are taken into account. The full model, Model 4, shows that net of the other predictors, most native-born ethnics report worse general health compared to native-born whites. Only native-born Japanese and South Asians are no different from native-born whites. Recent immigrants do tend to report better SRH compared to native-born but this effect is not significant for the immigrants who spent more than 15 years in the U.S. Socio-demographic and behavioral characteristics have predicted effects.

Does the immigrant health paradox found in the pooled model holds for every ethnic group? There are substantial differences in the effect of nativity/duration of stay in the U.S. between ethnic groups (Table 2). Mexican, white, and especially Chinese, Korean and Vietnamese immigrants report worse SRH than native-born of the same ethnicity. South Asian and Japanese recent immigrants report much better SRH than native-born of the same ethnicity. The differences in SRH between black native-born and black immigrants are not significant.

When other socio-demographic and behavioral factors are taken into account (Table 3), immigrant health advantage remains only for South Asian, Japanese, and white. For other ethnic group immigrants, there is no statistically significant difference in SRH of immigrants and native-born regardless of the duration of stay in the U.S. The immigrant health disadvantage found in unadjusted models seems to result from the fact that immigrants are more likely to have lower socio-economic status and poor English-language proficiency.

Conclusion

American immigrant population is extremely diverse with respect to history of immigration, education, socioeconomic-status, legal status, English-language ability – the factors that have important implications for mortality and morbidity. The results of this research are only partially consistent with the "immigrant health paradox". In fact, most immigrants report having worse health compared to native-born of the same ethnicity. When socio-demographic factors are taken into account, only a few immigrant groups show the expected pattern. Non-Hispanic whites, South Asian and Japanese immigrants tend to report better health than native-born of the same ethnicity. Immigrant health advantage that appears in the pooled model seems to be driven by the large sample size for non-Hispanic whites. However, there are substantial differences in self-reported health between ethnic groups. Controlling for many socio-economic and behavioral factors, Mexican, Chinese, Filipino, Korean, Vietnamese and black report worse health compared to non-Hispanic whites. The differences between these groups are not significant, except for the Vietnamese whose self-reported health is the worst.

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Table 1. Logistic regression coefficients predicting log odds of being in poor/fair health (weighted)

	Model 1	Model 2	Model 3	Model 4
(non-Hispanic white)				
Mexican	0.840***	0.515***	0.245***	0.230***
	(0.024)	(0.028)	(0.037)	(0.039)
Chinese	0.315***	-0.136**	0.066	0.261***
	(0.044)	(0.048)	(0.066)	(0.066)
Filipino	0.093	-0.346***	0.396***	0.474***
	(0.064)	(0.067)	(0.076)	(0.075)
South Asian	-1.032***	-1.515***	-0.275	-0.179
	(0.138)	(0.142)	(0.154)	(0.155)
Japanese	-0.241*	-0.329**	-0.300**	-0.177
	(0.103)	(0.107)	(0.114)	(0.111)
Korean	0.394***	-0.100	0.181*	0.363***
	(0.068)	(0.069)	(0.081)	(0.079)
Vietnamese	1.230***	0.722***	0.752***	0.971***
	(0.059)	(0.062)	(0.075)	(0.075)
Non-Hispanic Black	0.379***	0.471***	0.328***	0.252***
	(0.041)	(0.042)	(0.045)	(0.046)
Native born				
<5 years in the U.S.		0.557***	-0.310***	-0.237**
		(0.061)	(0.082)	(0.082)
5-15 years in the U.S.		0.706***	-0.152**	-0.067
		(0.034)	(0.054)	(0.056)
>15 years in the U.S.		0.801***	-0.067	0.009
		(0.027)	(0.044)	(0.045)
Female			-0.133***	-0.072**
			(0.021)	(0.024)
Age			0.086***	0.061***
			(0.004)	(0.004)
Age squared			-0.001***	-0.000***
			(0.000)	(0.000)
Married			-0.294***	-0.263***
			(0.019)	(0.021)
Children present			-0.228***	-0.235***
			(0.026)	(0.027)
Education			-0.217***	-0.209***
			(0.020)	(0.020)
Education squared			0.007***	0.008***
			(0.002)	(0.002)
Speak only English				
Speak English well			0.185***	0.168***
			(0.032)	(0.031)
Speak English not well			0.926***	0.928***
			(0.054)	(0.054)

Unemployed			0.335***	0.320***
			(0.044)	(0.046)
Work hours			-0.017***	-0.016***
			(0.002)	(0.002)
Work hours squared			0.000***	0.000***
			(0.000)	(0.000)
Very poor				
Poverty level 2			-0.198***	-0.193***
			(0.032)	(0.032)
Poverty level 3			-0.484***	-0.456***
			(0.036)	(0.036)
Poverty level 4			-0.934***	-0.868***
			(0.037)	(0.039)
BMI				0.055***
				(0.002)
Not smoking				
Current smoker				0.469***
				(0.035)
Former smoker				0.279***
				(0.056)
Binge drinking				-0.062
				(0.036)
Uninsured				0.012
				(0.039)
Year 2001				
Year 2003	0.098***	0.090***	0.069**	0.082**
	(0.021)	(0.022)	(0.024)	(0.025)
Year 2005	0.015	0.019	0.070*	0.081**
	(0.024)	(0.025)	(0.027)	(0.029)
Year 2007	0.009	0.009	0.036	0.037
	(0.029)	(0.030)	(0.035)	(0.035)
Constant	-1.678***	-1.850***	-2.536***	-3.709***
	(0.018)	(0.019)	(0.124)	(0.126)
Observations	179,732	179,684	179,378	177,979
DF	11	14	29	34

Standard errors in parentheses (calculated using jackknife resampling method and the mean squared error formula of the jackknife variance estimator)
*** p<0.001, ** p<0.01, * p<0.05

Table 2. Logistic regression coefficients predicting log odds of being in poor/fair health by ethnicity (weighted), Model 1

	Mexican	Chinese	Filipino	South Asian	Japanese	Korean	Vietnamese	White	Black
Native born									
<5 years in the U.S.	0.970***	1.122***	-0.184	-1.499**	-2.564***	1.799***	1.981***	0.273*	-0.207
	(0.108)	(0.211)	(0.334)	(0.527)	(0.748)	(0.427)	(0.493)	(0.109)	(0.384)
5-15 years in the U.S.	0.760***	1.146***	0.242	-0.578	-0.877	1.488***	2.387***	0.669***	-0.323
	(0.068)	(0.180)	(0.248)	(0.454)	(0.462)	(0.380)	(0.450)	(0.055)	(0.259)
>15 years in the U.S.	0.915***	1.196***	0.591**	-0.094	-0.007	2.056***	1.750***	0.774***	-0.286
	(0.047)	(0.160)	(0.193)	(0.378)	(0.238)	(0.381)	(0.412)	(0.040)	(0.189)
Year 2001									
Year 2003	0.031	0.133	0.415*	0.698	-0.293	0.455*	0.107	0.062*	0.129
	(0.060)	(0.126)	(0.163)	(0.413)	(0.268)	(0.191)	(0.158)	(0.027)	(0.080)
Year 2005	-0.165*	0.370**	0.146	-0.210	0.136	0.637**	0.324*	0.026	-0.113
	(0.064)	(0.118)	(0.177)	(0.447)	(0.286)	(0.192)	(0.130)	(0.031)	(0.089)
Year 2007	-0.026	0.158	0.540**	0.661	-0.049	0.218	0.103	-0.015	-0.063
	(0.074)	(0.122)	(0.194)	(0.395)	(0.278)	(0.218)	(0.163)	(0.030)	(0.098)
Constant	-1.350***	-2.513***	-2.208***	-2.580***	-1.776***	-3.346***	-2.444***	-1.842***	-1.234***
	(0.054)	(0.175)	(0.212)	(0.463)	(0.194)	(0.422)	(0.443)	(0.019)	(0.059)
Observations	17,718	5,139	2,750	1,643	1,677	2,542	2,271	134,829	9,633
DF	6	6	6	6	6	6	6	6	6

Standard errors in parentheses (calculated using jackknife resampling method and the mean squared error formula of the jackknife variance estimator)

*** p<0.001, ** p<0.01, * p<0.05

Table 3. Logistic regression coefficients predicting log odds of being in poor/fair health by ethnicity (weighted), Model 4

	Mexican	Chinese	Filipino	South Asian	Japanese	Korean	Vietnamese	White	Black
Native born									
<5 years in the U.S.	-0.008	0.257	-0.575	-1.520**	-2.091*	0.880	0.323	-0.633***	-0.575
	(0.152)	(0.263)	(0.411)	(0.555)	(0.842)	(0.490)	(0.562)	(0.129)	(0.489)
5-15 years in the U.S.	-0.168	0.407	-0.148	-0.896	0.180	0.459	0.522	-0.204*	-0.264
	(0.103)	(0.237)	(0.304)	(0.601)	(0.667)	(0.470)	(0.502)	(0.091)	(0.311)
>15 years in the U.S.	-0.030	0.244	0.111	-1.223*	-0.024	0.578	0.083	-0.053	-0.034
	(0.094)	(0.192)	(0.242)	(0.540)	(0.297)	(0.456)	(0.507)	(0.061)	(0.232)
Female	0.065	0.075	0.174	0.112	-0.179	0.353	0.092	-0.209***	0.200*
	(0.062)	(0.105)	(0.156)	(0.278)	(0.227)	(0.197)	(0.149)	(0.028)	(0.098)
Age	0.061***	0.055*	0.004	0.156**	0.076*	0.166***	0.099**	0.054***	0.085***
	(0.011)	(0.025)	(0.029)	(0.055)	(0.034)	(0.032)	(0.033)	(0.005)	(0.016)
Age squared	-0.000***	-0.000	0.000	-0.001	-0.000	-0.001***	-0.001	-0.000***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married	-0.291***	-0.177	-0.008	-0.809**	-0.274	-0.433*	-0.320	-0.257***	-0.254**
	(0.066)	(0.153)	(0.169)	(0.301)	(0.235)	(0.172)	(0.174)	(0.028)	(0.082)
Children present	-0.229***	-0.165	-0.334	-0.355	0.603*	-0.392*	-0.129	-0.234***	-0.460***
	(0.057)	(0.145)	(0.204)	(0.315)	(0.281)	(0.175)	(0.164)	(0.038)	(0.104)
Education	-0.321***	-0.012	0.113	0.331	0.593*	-0.228*	0.061	-0.226***	-0.111
	(0.053)	(0.129)	(0.214)	(0.259)	(0.262)	(0.112)	(0.115)	(0.027)	(0.090)
Education squared	0.019**	-0.009	-0.012	-0.044	-0.063*	0.012	-0.019	0.009***	-0.001
	(0.006)	(0.012)	(0.018)	(0.023)	(0.024)	(0.011)	(0.011)	(0.002)	(0.008)
Speak only English									
Speak English well	0.046	0.224	0.168	0.780	0.029	0.055	0.157	0.187***	-0.025
	(0.105)	(0.178)	(0.193)	(0.458)	(0.284)	(0.381)	(0.472)	(0.037)	(0.163)
Speak English not well	0.730***	1.026***	0.611	0.645	0.546	0.495	1.021*	1.035***	1.686***
	(0.130)	(0.203)	(0.355)	(0.787)	(0.480)	(0.403)	(0.472)	(0.086)	(0.410)
Unemployed	0.187	0.515*	0.422	0.566	1.413*	0.654*	0.648	0.241***	0.703***
	(0.109)	(0.244)	(0.367)	(0.626)	(0.654)	(0.297)	(0.337)	(0.053)	(0.150)
Work hours	-0.006	-0.000	-0.012	-0.003	0.022	0.014	0.006	-0.027***	-0.019*
	(0.005)	(0.012)	(0.017)	(0.028)	(0.033)	(0.016)	(0.017)	(0.003)	(0.007)

Work hours squared	0.000	0.000	0.000	-0.000	-0.000	-0.000	-0.000	0.000***	0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Very poor									
Poverty level 2	-0.189**	-0.339*	-0.597	-0.621	-0.207	-0.033	0.092	-0.217***	-0.070
	(0.062)	(0.158)	(0.307)	(0.496)	(0.547)	(0.203)	(0.193)	(0.049)	(0.098)
Poverty level 3	-0.341***	-0.241	-0.622*	-0.342	-0.303	-0.158	-0.179	-0.550***	-0.556***
	(0.076)	(0.224)	(0.284)	(0.487)	(0.530)	(0.276)	(0.250)	(0.055)	(0.142)
Poverty level 4	-0.730***	-0.428**	-1.055***	-0.563	-0.949	-0.863***	-0.455*	-0.946***	-0.816***
	(0.104)	(0.155)	(0.249)	(0.394)	(0.509)	(0.181)	(0.212)	(0.050)	(0.095)
BMI	0.030***	0.065***	0.101***	-0.000	0.083***	0.018	0.006	0.067***	0.057***
	(0.005)	(0.015)	(0.018)	(0.033)	(0.020)	(0.022)	(0.010)	(0.003)	(0.007)
Not smoking									
Current smoker	0.277*	0.000	0.725**	0.546	-0.142	0.469	-0.299	0.622***	0.289**
	(0.124)	(0.226)	(0.255)	(0.553)	(0.355)	(0.240)	(0.236)	(0.040)	(0.099)
Former smoker	0.099	0.431	-0.423	-0.064	0.722	0.912**	0.231	0.400***	0.272
	(0.101)	(0.705)	(0.392)	(0.941)	(0.698)	(0.331)	(0.389)	(0.064)	(0.161)
Binge drinking	-0.019	-0.175	0.046	-0.474	0.681	-0.480*	0.232	-0.113*	0.160
	(0.085)	(0.347)	(0.280)	(0.682)	(0.360)	(0.237)	(0.253)	(0.047)	(0.167)
Uninsured	0.012	0.167	-0.252	-0.017	-0.888	0.154	-0.157	0.054	-0.305*
	(0.068)	(0.154)	(0.320)	(0.411)	(0.464)	(0.152)	(0.187)	(0.056)	(0.141)
Year 2001									
Year 2003	0.058	0.066	0.499*	0.570	-0.267	0.513*	-0.166	0.043	0.141
	(0.066)	(0.131)	(0.198)	(0.523)	(0.321)	(0.218)	(0.179)	(0.031)	(0.096)
Year 2005	-0.050	0.488**	0.148	-0.399	0.196	0.706**	0.019	0.080*	-0.092
	(0.072)	(0.146)	(0.197)	(0.509)	(0.320)	(0.221)	(0.174)	(0.034)	(0.105)
Year 2007	0.054	0.254	0.561*	0.397	0.111	0.146	-0.190	-0.004	-0.097
	(0.083)	(0.145)	(0.218)	(0.484)	(0.300)	(0.212)	(0.182)	(0.035)	(0.119)
Constant	-2.461***	-5.360***	-4.718***	-6.147***	-8.157***	-6.495***	-4.319***	-3.567***	-4.464***
	(0.303)	(0.746)	(0.944)	(1.635)	(1.583)	(0.969)	(0.990)	(0.173)	(0.418)
Observations	17,226	5,118	2,737	1,639	1,670	2,507	2,239	133,813	9,552
DF	26	26	26	26	26	26	26	26	26

Standard errors in parentheses (calculated using jackknife resampling method and the mean squared error formula of the jackknife variance estimator)

*** p<0.001, ** p<0.01, * p<0.05