Understanding Subgroup Variations of the Epidemiological Paradox

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Despite difficulties negotiating life in a new country, immigrants to the United States have better health outcomes than the native born population. Over time, however, their health outcomes tend to converge with native born residents. This pattern, known as the "epidemiological paradox," is generally observed among Hispanic migrants, however, little is known about how the paradox varies across subgroups. The goal of this paper is to consider Asian American ethnic subgroups using data from the National Latino and Asian American Survey (NLAAS). Using a stratified probability sampling design the NLAAS investigates the lifetime and 12-month prevalence of psychiatric disorder and mental health service use among a representative sample of Latino American and Asian American groups. This analysis will address the question; how are mental health outcomes of migrants affected by length of residence and ethnic subgroup? Discussion will focus on implications for the future population health of these groups.

Introduction

Despite public belief it has been established that there are marked differences between the general health of foreign born and native born residents. Although there are some variations, Immigrants on average are more likely to have better overall all health than native born residents despite having to negotiating life socially and economically in a new country. Referred to as the epidemiological paradox (Pearl, Braveman, & Abrams, 2001; Zambrana & Logie, 2000) this pattern appears to be consistent across all racial groups for which data is available. These significant differences in health outcomes between foreign born and native born residence have been found across a number of health indicators. For example, numerous studies have been conducted on adult mortality (See; Cho, Frisbie, Hummer, Rogers, 2004; Hummer, Rogers, Nam, LeClere, 2000), while studies on immigrant prenatal health and infant mortality rates have drawn similar parallels (See; Frisbie, Forbes, & Pullum 1996; Hummer et al. 1999a). Likewise studies considering general health indicators such as number of sick days, self reported health, and limitations in activities have also been numerous (Cho, Frisbie, Hummer, Rogers, 2004). When length of residency is considered, it has been demonstrated that a relationship exists between deteriorating health outcomes and length of residency. Studies on U.S. immigrants reveal that the longer immigrants reside in the U.S. the less favorable their health outcome become (Buckley & Sakamoto, 2001).

While many of these studies have focused on the health outcomes of Hispanic ethnic subgroups, less attention has been given to outcomes among various other subgroups. When the health patterns of Asian subgroups are considered it is often within the context of larger findings across multiple immigrant groups while little attention is given to within group variation. In addition, though a few studies have included mental health indicators in their analysis more study is needed to observe the epidemiological paradox as it functions among mental health outcomes and length of residency. To what extent is the epidemiological paradox consistent across ethnic subgroups? And are these outcomes observed between length of residency and mental health outcomes?

In this study we will examine the epidemiological paradox among subgroups of Asian American respondents in the National Latino and Asian American Survey (NLAAS). This study will address the question; how are mental health outcomes of migrants affected by length of residence and ethnic subgroup? And what does this imply for the future population health of these groups? Expected findings include, parallel processes in the variation of general and mental health indicators across subgroups and interactions with acculturation and discrimination indicators. Extending the analysis to Asian American subgroups offers insights into the role of ethnicity as a determinant of population health.

Literature Review

In general studies on the health of foreign born populations reveal that the epidemiological paradox is evident among most racial/ethnic groups across a number of health indicators (Singh, & Miller, 2004). Comparisons of mortality outcomes between foreign born and U.S. born respondents reveal that most foreign born individuals have longer life expectancy and lower mortality rates than U.S. born individuals (Hummer et al, 1999b). Likewise, studies on perinatal and maternal health reveal similar parallels. For example in their comparison of US born and foreign born women's infant mortality, low birth weight, and preterm birth outcomes, Singh and Yu found significant variation in maternal nativity differences with larger differentials and more favorable pregnancy outcomes for Blacks, Chinese, and Mexican immigrants (Singh & Yu, 1996). However, other studies have found mixed results in prenatal health outcomes. In their analysis on the perinatal outcomes of Mexican origin women Hessol and Feuntes-Afflick found that after adjusting for confounders Latino women in their sample had lower risk of premature or low birth rate and lower incidence of pregnancy complications but higher rates of gestational diabetes (2000). Similarly, Rosenberg and colleagues found that differential behavioral risk factors rather than birth place appear to be responsible for most of the variability in birth outcomes among Latina respondents in their sample (2005). Finally, studies of general health indicators such as number of sick/days, self reported health, and limitations in activity

also reveal paradoxical outcomes. For example, in their comparisons of native and foreign born Hispanic adults by native born blacks and whites, Cho and colleagues found large differentials in number of bed sick days, self reported health, and limitations in activities across the groups in their study. According to their findings, Puerto Ricans experienced the worst health outcomes of all groups while Mexican respondents exhibited wide variations in outcomes across indicators (Cho, Frisbie, Hummer, Rogers, 2004).

Recent studies however suggest that there is significant variation in the epidemiological paradox across subgroups. For example, Hummer and colleagues found moderate but significant differences in mortality advantage among their sample of Mexican Americans, Puerto Ricans, Cubans, Central/South Americans, and Other Hispanics (2000). Further studies suggest that length of residency is negatively associated with the health advantage seen among foreign born groups. For example, studies on U.S. immigrants reveal those who have resided in the U.S. longer than five years seem to have less favorable health outcomes than more recent immigrants. Immigrants who have resided in the US for 20 years report less favorable health outcomes than those who have been in residence for 5 or 10 years (Stephen, E. H., Foote, K., Hendershot, G. E., & Schoenborn, C. A. 1994). A dominant theoretical explanation for this decline is assimilation. Assimilationists would argue that the adaptation to the poor health habits of the new country results in a deterioration of health over time and in health status similar to that of their native born counterparts. Further, assimilation /acculturation has been reported to influence determinants of health such as depression (Shen & Takeuchi, 2001; Takeuchi, Chun, Gong, & Shen, 2002) and health behavior Abraido-Lanza, A.F., Chao, M.T., & Florez, K.R, 2005).

A secondary explanation that has received less attention within the literature on immigrant health outcomes is the role of perceived and experienced discrimination. Research on US racial/ethnic groups suggest that experienced or perceived discrimination may account for the poorer health outcomes that are observed between US born white and Black citizens (Williams, Neighbors, Jackson, 2003). One particular theory, the “weathering hypothesis” suggests that African Americans experience what is

considered to be a cumulative effect of experience discrimination that presents itself in the poorer health indicators (Geronomous, 1996).

Despite, the wealth of literature, two major limitations exist in the study of the epidemiological paradox. Firstly, most studies focus on the health outcomes of Hispanic subgroups while much less research to date on the heath outcomes of Asian American subgroups. When these groups are considered the focus is often on cross racial comparisons or acculturative forces. Only a few studies have attempted to examine subgroup variation among Asian Americans (See; Frisbie, Cho, & Hummer, 2001; Rambaut & Weeks, 1991). Secondly, most studies concentrate on physical health outcomes while only a few have addressed the epidemiological paradox as it relates to mental health outcomes and length of residency (see; Finch, Frank, & Vega, 2004). This study will attempt to link the research on mental health of immigrants with findings of the epidemiological paradox while extending the analysis to Asian American subgroups. The following 7 hypothesis will be tested: 1) Do foreign born and native born Asian Americans differ in their general health reporting? 2) Do foreign born and native born Asian Americans differ in their mental health reporting? 3) Are there variations in the differences between foreign born and native born general health reporting by subgroup membership? 4) Are there variations in the differences between foreign born and native born mental health reporting by subgroup membership? 5) Do foreign born poor or fair general health reporting increase with length of residency? 6) Do foreign born poor or fair mental health reporting increase with length of residency? 7) Are acculturative stress and perceived discrimination associated with the general and mental health patterns observed?

The contributions of this study are several. It aims to extend the analysis of the epidemiological paradox to a new national data set, secondly it compares and contrasts general health and mental health indicators, thirdly it attempts to understand subgroup variations in the epidemiological paradox, and finally it begins to explore the association between experienced and perceived discrimination and health outcomes.

Data and Methods

Data

The goal of this paper is to consider Asian American subgroups using the National Latino and Asian American Survey (NLAAS) to investigate how mental health outcomes are affected by length of residency and ethnic subgroup. A new dataset, the NLAAS is the first psychiatric epidemiological and service use study among a National sample of Latinos and Asian Americans (For specific details of the NLAAS study design and sample see: Alegria, M. et al. 2004). Using a stratified probability sampling design the NLAAS investigates the lifetime and 12-month prevalence of psychiatric disorder and mental health service use among a representative sample of Latino American (n=2,554) and Asian American (n=2,095) groups. In person interviews were conducted between May 2002 and November 2004 for a total national sample of 4,864 Latino and Asian American adults which includes a small subgroup of 215 White Americans. The Latino groups included in the study were Cuban, Mexican, Puerto Rican, and Other Latino, while Chinese, Filipino, Vietnamese, and Other Asian composed the Asian American sample. Finally, sub ethnic group differences were adjusted by using weighted age and gender estimates to match the census distributions for Latino and Asian sub ethnic groups.

Participants

The sample in this study was obtained from a subset of data from the NLAAS. The demographics of the respondents in this study are reported in Table 1. The total sample size for this analysis is N= 2073 of which 23.5% are Chinese, 19% Filipino, 22.2% Vietnamese, 19.8% other Asian, and 15.5% Biracial/Mixed Asian. Of this sample 47.6% are female and 78.4% are foreign born with two respondents who did not report there nativity status. Respondent's ages range from 18-65+ with the largest age group falling between the ages of 25-34 (25.2%). NLAAS contained 65.7% married respondents, 24.5% unmarried respondents, and 9.8% widowed or divorced respondents with the majority (72.8%) of respondents having no additional members living in there household. Data on income, social position, and education revealed that 42.7% of sample had income between $0 - 14,999;

23.3% within $15,000 – $34,999; 25% within 35,000 - $74,999; and 9% above $75,000. Finally, measures of education reveal that 15.2 % of sample had less than 11 years of education, 17.9% of sample had 12 years of education, 25.1% had 13-15 years of education; and a large proportion of the sample (41.9%) had 16 or more years of education. Consistent with what is already known about the income differentials and gender more female respondents had income levels at or below $34,000 (41%) then male respondents (26.9%) despite having fairly comparable educational levels. Twenty-two respondents were dropped from the analysis when further investigation revealed that these respondents were not Asian American.

Analysis Strategy

This analysis has been divided into two parts. Part one examines the extent to which the epidemiological paradox and health decline is observed among Asian subgroups in the sample. Two measures of overall health will be analyzed: self reported general health and self reported mental health. Self rated health has been identified as a useful measure for understanding health status (Idler & Benyamini, 1997). Both these measures will be examined controlling for: gender, age, income, and education. The second part of this analysis will investigate the association between acculturation and perceived or experienced discrimination and health which have been reported to explain the decline in health over length of residency.

Logistic regression (adjusted for: gender, age, income and education) will be used to test associations between health outcomes, nativity, ethnic subgroup, and length of residency. Logistic regression is similar to that of regression methods with a few exceptions. First, the dependent variable is discrete with as few as two categories and secondly, no assumptions need to be made (Such as normality, linearity, or equivalent variances) (Mertler, &Vannatta, 2002).

All analyses use weighted data that adjust for demographic variables in the multi-stage stratification sampling, non-response rates, and post-stratification factors. The analysis also takes into account sample design effects using SAS callable SUDAAN.

Results

Descriptive results for question 1 & 2.

We first examined the question; "Do foreign born and native born Asian Americans differ in their general health reporting?" (See Table 2). Of the U.S. born respondents 88.8% (95% CI 85.5%-91.4%) identified having good, very good, or excellent health while only 82.4% (95% CI 79.5%-85. %) of foreign born identified having good, very good, or excellent health. Eleven point two percent (95% CI 8.6%-14.5%) of US born respondents identified having poor or fair general health while 17.6% (95% CI 79.5%-85%) of foreign born respondents identified having poor or fair health.

Likewise, our second question "Do foreign born and native born Asian Americans differ in their mental health reporting" revealed similar patterns where 95.1% (95% CI 92.1%-97%) of US born respondents reported good, very good, or excellent mental health while 89.7% (95% CI 87.1%-91.8%) of foreign born reported good, very good, or excellent mental health. Four point nine percent (95% CI 3%-7.9%) of US born reported poor or fair mental health while 10.28% (95%CI 8.2% - 12.9%) of foreign born reported poor or fair mental health (See Table 3).

To further examine the difference between foreign born and U.S. born poor or fair reporting of general and mental health we plotted percent reporting poor or fair general health against age adjusted for number of years in the U.S. Plots of general health indicate that both foreign and native born respondents have similar reports of general health until the age of 25 years. Results reveal that with age there is a larger increase in reporting of poor or fair general health for foreign born (Figure 1) while U.S. born respondent's reports of poor or fair general health remain fairly constant through age 65. Reports of poor or fair mental health by age reveals similar reporting of poor or fair mental health until age 45 when foreign born reports of poor or fair mental health increase and US born reports of poor or fair mental health slightly decline (Figure 2).

Descriptive results for question 3&4.

We then proceed to ask the question, "Are there variations in the differences between foreign born and native born general health reporting by subgroup membership"? Again we examined general health outcomes by nativity, and ethnicity (See table 4). The results of this analysis reveal mixed outcomes (See Table 4). Higher percentages of Chinese, Filipino, and Vietnamese foreign born respondents reported good, very good, or excellent general health than there US born counterpart. Of the US born respondents who reported good, very good, or excellent general health, 12.8% (95% CI 9.9% -16.4%) were Chinese, 16.2% (95%CI 11.4% - 22.5%) were Filipino, .9% (95% CI .4% - 1.7%) were Vietnamese, 34.3% (95% CI 29.5% - 39.4%) were other Asian, 35.9%(95% CI 32.6 – 39.2%) were Biracial/Mixed ancestry. Compared to the foreign born respondents who reported good, very good, or excellent general health, 24.9% (95% CI 19.8% -30.7%) were Chinese, 18.9% (95% CI 14.8% - 23.9%) were Filipino, 14.2% (95% CI 10.3% - 19%) were Vietnamese, 32.9% (95% CI 27% - 39.3%) were other Asian, 9.2% (95% CI 6.6% – 12.5%) were of Biracial/Mixed ancestry.

In contrast, the results of our question, "Are there variations in the differences between foreign born and native born mental health reporting by subgroup membership (See Table 5) revealed that of the US born who reported good, very good, or excellent mental health 12.1% (95% CI 9.2% -15.7%) were Chinese, 15.9% (95% CI 11.3% – 21.9%) were Filipino, 1.2% (95% CI .6% - 2.2%) were Vietnamese, 34% (95% CI 29.2% - 39.2%) were other Asian, 36.9%(95% CI 33% – 40.8%) were Biracial/Mixed ancestry. Compared to the foreign born respondents; 25.5% (95% CI 20.2% - 31.7%) were Chinese, 18.4% (95% CI 14.3% - 23.3%) were Filipino, 14.7% (95% CI 10.8% - 19.8%) were Vietnamese, 32.2% (95% CI 26.2% - 38.8%) were other Asian, 9.2% (95% CI 6.9% – 12.1%) were of Biracial/Mixed ancestry.

Descriptive results for question 5&6.

Next we proceeded to examine the questions; "Do foreign born poor or fair general health reporting increase with length of residency?" and "Do foreign born poor or fair mental health reporting

increase with length of residency?" To do this we plotted percent reporting poor or fair general health against length of residency for both general and mental health outcomes. Examination of figures 3 and 4 reveal very similar general and mental health reporting patterns for foreign born respondents. General and mental health reporting stay consistently above the means for native born residents, with a gradual decline until 36-40 years of residency, at which time reporting behavior gradually increases 40 plus years of residency.

Logistic regression results for questions 1-7.

To investigate whether there are significant differences in reporting poor or fair general and mental health by; nativity, ethnic subgroup, and length of residency, logistic regression was conducted controlling for; gender, age, income, and education. We first ran a logistic regression model for general health including nativity and ethnic subgroup as independent variables and age, gender, income, and education as control variables. Results of this analysis revealed that neither nativity nor ethnic subgroup were significantly associated with poor or fair general health reporting. Likewise we followed the same analysis procedure to examine the relationship between nativity and ethnic subgroup on mental health reporting. Similar to general health reporting outcomes nativity and ethnic subgroup membership were not significantly associated with poor or fair mental health reporting. Next we removed nativity and ethnic subgroup from the models and ran a logistic regression model to test the relationship between general and mental health reporting and length of residency with U.S. born Asian Americans as the reference group. Again results reveal no significant differences between poor or fair general or mental health reporting and length of residency among foreign born respondents.

We then proceeded to test the above general and mental health reporting models for associations with acculturative stress and experienced and perceived discrimination among foreign born. Interestingly, our findings reveal that acculturative stress is significant ($p=.05$) only for general health reporting while experienced and perceived discrimination was insignificant for both general and mental health reporting (See Table 6).

Using the same steps as the previous analysis we conducted subgroup comparisons between Chinese, Filipino, and Vietnamese respondents removing ethnic subgroup and leaving in the model length of residency, acculturative stress, and perceived and experienced discrimination and controlling for; gender, age, income, and education (we omitted Asian and Mixed Asian categories for definitional reasons). Again findings reveal that nativity was not significant across subgroups. We removed nativity from the model and tested length of residency. Once again the analysis revealed that length of residency was not significant for any of the groups in our model. We next added acculturative stress and experienced and perceived discrimination. Findings reveal that acculturative stress was only significant for Chinese respondents reporting poor or fair general health. Perceived and experienced discrimination was still not a significant factor in our model. However, there were significant variations in the variance due to other factors in our model (See Tables 7&8). For example, among general health reporting a strong relationship exist between age and income and reporting poor or fair general health for Vietnamese respondents. In addition we found a significant relationship between education and poor or fair reporting for Filipino respondents. For mental health reporting, much less significant here as income is no longer significant in the model for Vietnamese subgroups, and acculturation is no longer significant for Chinese subgroups.

Discussion

The epidemiological paradox has been reported to exist across multiple ethnic groups to the extent to which data is available. Many of these studies compare immigrant health outcomes with U.S. born white groups. Though cross group comparisons are useful when attempting to understand disparities in health outcomes, studies are needed to investigate variations in health patterns within ethnic subgroups and among mental health indicators.

This study attempts to extend the investigation of the epidemiological paradox to Asian American ethnic subgroups by addressing the question; how are mental health outcomes of migrants affected by length of residence and ethnic subgroup? Results of this analysis illustrate how critical it is

to conduct within group comparisons to further understand the epidemiological paradox. Results of this analysis among the NLAAS respondents reveal that nativity and length of residency are not significant factors in understanding the reporting of poor or fair general and mental health among the Asian subgroups in our sample. In addition, experienced and perceived discrimination provide no explanatory power in understanding the poor or fair mental health reporting of our sample. However, this analysis does confirm that mental health reporting does in fact parallel that of general health reporting and that there is some variation in health outcomes across Asian American Subgroups.

Directions for future research include investigating specific measures of mental health such as; limitations in daily activities and mental health service use to investigate variations in mental health reporting behavior. Secondly, development of measures is needed to understand how discrimination is experienced or perceived differently across ethnic groups. Capturing these differences may lie at the heart of understanding how experienced and perceived discrimination influence health. Finally, future studies will compare findings among Asian subgroups with that of Latino and Caribbean national samples.

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Table 1

Sample Demographics

	(N) Total	% Total	(N) Male	% Male	(N) Female	% Female
Ethnicity						
Chinese	488	23.5	233	11.2	255	12.3
Filipino	393	19	184	8.9	209	10.1
Vietnamese	460	22.2	216	10.4	244	11.8
Other Asian Alone	411	19.8	205	9.9	206	9.9
Biracial/Mixed Asian	321	15.5	149	7.2	172	8.3
All	2073	100	987	47.6	1086	52.4
Gender						
Male	987	47.61	N/A	N/A	N/A	N/A
Female	1086	52.39	N/A	N/A	N/A	N/A
All	2073	100	N/A	N/A	N/A	N/A
Nativity						
US Born	447	21.6	223	10.77	224	10.8
Foreign Born	1624	78.4	763	36.8	861	41.6
All	2071	100	986	47.57	1085	52.4
Age						
18-24	269	13	130	6.3	139	6.7
25-34	522	25.2	256	12.4	266	12.8
35-44	485	23.4	219	10.6	266	12.8
45-54	427	20.6	204	9.8	223	10.8
55-64	208	10	99	4.8	109	5.3
65+	162	7.8	79	3.8	83	4
All	2073	100	987	47.7	1086	52.4
Years in US						
No greater than 5 years	301	14.5	140	6.8	161	7.8
6-10 years	298	14.4	125	6	173	8.4
11-15 years	291	14.1	127	6.1	164	7.9
16-20 years	290	14	158	7.6	132	6.4
21-25 years	321	15.5	145	7	176	8.5
26-30 years	186	9	100	4.8	86	4.2
31-35 years	110	5.3	52	2.5	58	2.8
36-40 years	77	3.7	37	1.8	40	1.9
41-45 years	52	2.5	21	1	31	1.5
46-50 years	40	1.9	25	1.2	15	0.7
Greater than 50 years	104	5	55	2.7	49	2.4
All	2070	100	985	47.5	1085	52.5
Income						
$0 - $14,999	806	42.7	303	16	503	26.6
$15,000 - $34,999	441	23.3	206	10.9	235	12.4
$35,000 - $74,999	473	25	278	14.7	195	10.3
$75,000+	170	9	128	6.8	42	2.2
All	1890	100	915	48.4	975	51.5
Education						
11 or less	315	15.2	123	6	192	9.3
12 Years	370	17.9	183	8.8	187	9
13 - 15 Years	520	25.1	224	10.8	296	14.3
16 + Years	867	41.9	456	22	411	19.9
All	2072	100	986	47.6	1086	52.5
Marital Status						
Married	1376	65.7	662	32	699	33.75
Never	508	24.5	265	12.8	243	11.73
Wid/Sep/Div	202	9.8	60	2.9	142	6.86
All	2086	100	987	47.7	1084	52.34

Table 2

Percent Reporting Poor or Fair and Good or Excellent General Health by Nativity

	US Born		Foreign Born		
Demographics	N	%	N	%	All
Good or Excellent	394	88.8	1325	82.4	1719
Poor or Fair	53	11.2	299	17.6	352
All	447	100	1624	100	2071

Table 3

Percent Reporting Poor or Fair and Good or Excellent Mental Health by Nativity

	US Born		Foreign Born		
Demographics	N	%	N	%	All
Good	424	95.1	1443	89.7	1867
Poor	23	4.9	180	10.3	203
All	447	100	1623	100	2070

Table 4

Percent Self Reported Good, Very Good, or Excellent General Health vs. Poor or Fair General Health by Ethnic Subgroup.

		US BORN				FOREIGN BORN			
	ALL	Good - Excellent		Poor or Fair		Good - Excellent		Poor or Fair	
Demographics	N	N	%	N	%	N	%	N	%
Ethnicity									
Chinese	486	62	12.8	3	4.6	310	24.9	111	42.8
Filipino	393	76	16.2	9	13	270	18.9	38	13.1
Vietnamese	460	9	0.9	5	3.7	345	14.2	101	18.9
Other Asian Alone	411	93	34.3	11	31.7	277	32.9	30	17.7
Biracial/Mixed Asian	321	154	35.9	25	47.1	123	9.2	19	7.4
All	2071	394	100	53	100	1325	100	299	100

Table 5

Percent Self Reported Good, Very Good, or Excellent Mental Health vs. Poor or Fair Mental Health by Ethnic Subgroup.

		US BORN				FOREIGN BORN			
	ALL	Good - Excellent		Poor or Fair		Good - Excellent		Poor or Fair	
Demographics	N	N	%	N	%	N	%	N	%
Ethnicity									
Chinese	485	63	12	2	8.3	349	25.5	71	49.4
Filipino	393	79	15.9	6	15.3	286	18.4	22	13.8
Vietnamese	460	13	1.2	1	1.1	391	14.7	55	17.3
Other Asian Alone	411	99	34	5	32.9	290	32.2	17	13.3
Biracial/Mixed Asian	321	170	36.9	9	42.3	127	9.2	15	6.3
All	2070	424	100	23	100	1443	100	180	100

Figure 1.

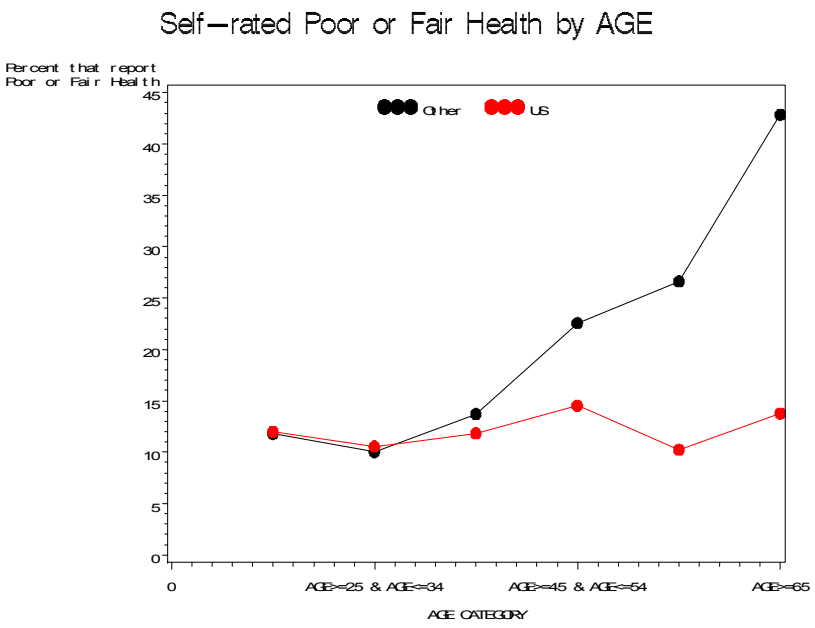

Figure 2.

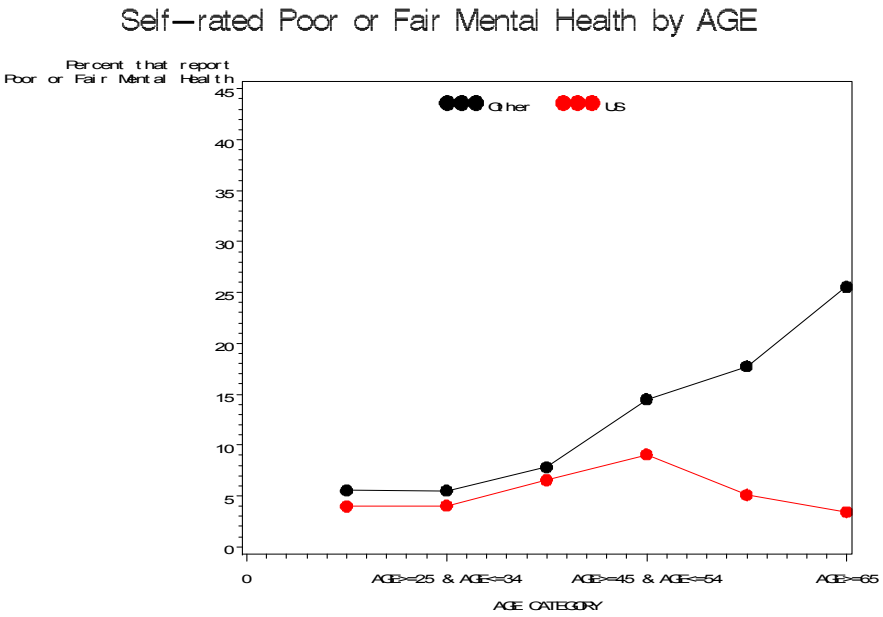

Figure 3.

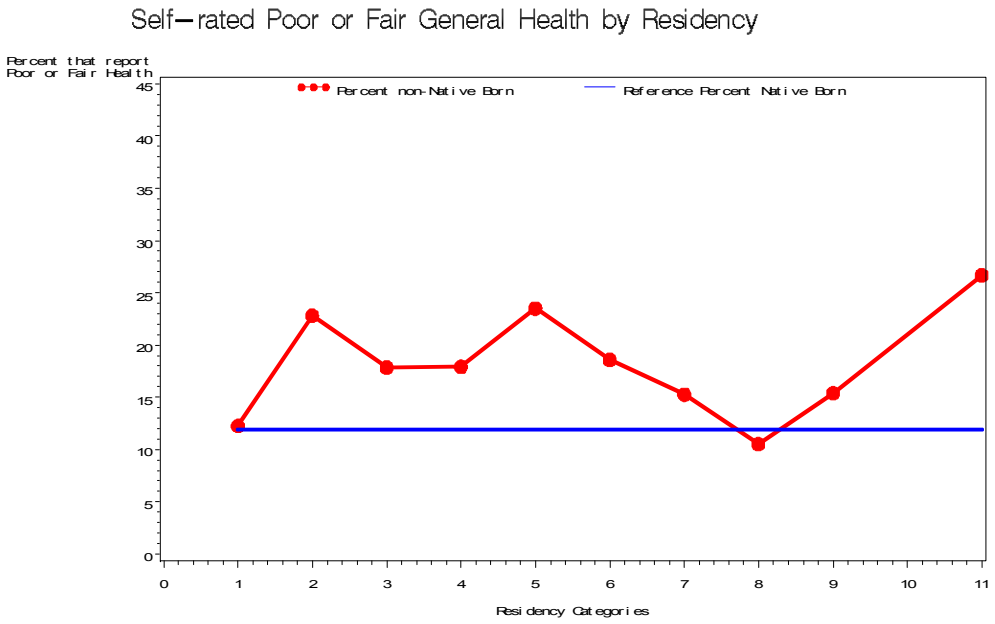

Figure 4.

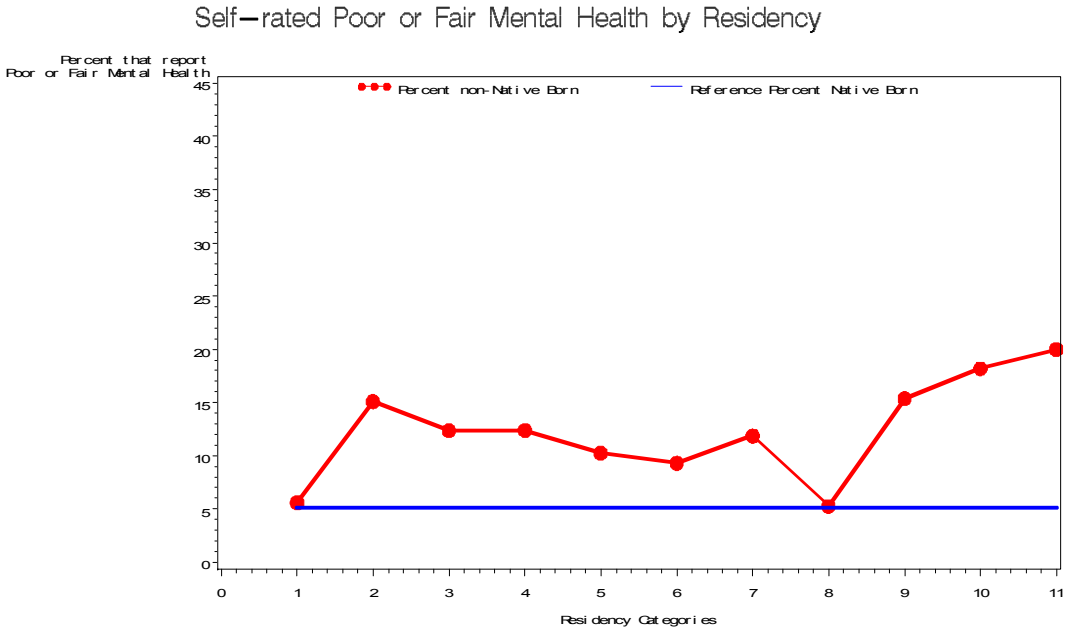

Table 6

Summary of Logistic Regression Analysis for Modeling Poor or Fair General and Mental Mental Health (N=2,073).

	Model							
Variable	1	SE	2	SE	3	SE	4	SE
Intercept	-1.77**	.25	-2.30**	.36	-2.03	.43	-2.57**	.57
Gender								
Male	-	-	-	-	-	-	-	-
Female	.15	.17	.41	.21	.06	.20	.27	.25
Age								
18-24	-	-	-	-	-	-	-	-
25-34	.52*	.25	.30	.41	.35	.37	.41	.57
35-44	.76*	.25	.50	.33	.66*	.31	.66	.45
45-54	1.28**	.28	1.11**	.35	1.27**	.35	1.23*	.49
55-64	1.18**	.28	1.03*	.37	1.40**	.33	1.34*	.50
65+	1.56**	.25	.94*	.45	1.98**	.34	1.46*	.60
Income								
$0 - $14,999	-	-	-	-	-	-	-	-
$15,000 - $34,999	-.59**	.16	-.39	.24	-.63**	.14	-.41	.30
$35,000 - $74,999	-1.13**	.17	-1.00**	.26	-1.09**	.21	-.92*	.31
$75,000+	-1.18*	.47	-1.35*	.52	-1.04	.52	-1.09	.58
Education								
11 or less	-	-	-	-	-	-	-	-
12 Years	-.30	.22	-.54*	.25	-.32	.23	-.47*	.23
13 - 15 Years	-.59*	.19	-.94*	.31	-.37	.21	-.79*	.28
16 + Years	-.74**	.21	-1.20**	.24	-.64	.22	-1.22**	.24
Length of Residency	.02	.04	.06	.04	.00	.08	.02	.05
Acculturative Stress					.11*	.05	.05	.05
Discrimination					.13	.26	.29	.25

*p<.05. **p<.001.

Note: Models 1 and 3 = General Health, Model 2 and 4=Mental Health.

Table 7

Summary of Logistic Regression Analysis for Modeling Poor or Fair General Health By Ethnic Subgroup.

Variable	Model					
	Chinese n=488	SE	Filipino n=393	SE	Vietnamese n=460	SE
Intercept	-.61	.72	-2.76*	1.32	-3.30**	.88
Gender						
Male	-	-	-	-	-	-
Female	.31	.35	-.35	.51	.58	.49
Age						
18-24	-	-	-	-	-	-
25-34	-1.34*	.63	1.77	1.55	1.70	.89
35-44	-.57	.59	2.38	1.24	1.93*	.87
45-54	-.24	.63	3.15*	1.29	2.13*	.71
55-64	.50	.50	1.62	1.32	3.15**	.67
65+	.77	.67	2.36	1.22	3.09**	.78
Income						
$0 - $14,999	-	-	-	-	-	-
$15,000 - $34,999	-.30	.36	-.67	.40	-1.65**	.47
$35,000 - $74,999	-.69	.48	-1.42	.74	-1.33**	.61
$75,000+	-1.08	.95	.00	.00	-1.05	1.39
Education						
11 or less	-	-	-	-	-	-
12 Years	.12	.53	-1.04	.61	-.17	.47
13 - 15 Years	-.46	.50	-1.03*	.46	1.21*	.41
16 + Years	-.72	.43	-1.34*	.46	.62	.44
Length of Residency	-.07	.10	.11	.10	-.11	.09
Acculturative Stress	.18*	.06	.15	.12	.00	.09
Discrimination	.14	.39	-.75	.58	.38	.47

Table 8

Summary of Logistic Regression Analysis for Modeling Poor or Fair Mental Health By Ethnic Subgroup.

Variable	Model					
	Chinese n=488	SE	Filipino n=393	SE	Vietnamese n=460	SE
Intercept	-1.35	.85	-2.09	1.54	-5.56**	1.14
Gender						.
Male	-	-	-	-	-	-
Female	.53	.46	-.06	.43	.72*	.33
Age						
18-24	-	-	-	-	-	-
25-34	-.76	.69	.35	1.24	2.84*	1.13
35-44	-1.03	.79	1.14	.90	1.90	.94
45-54	-.20	.71	1.03	1.04	3.30**	.85
55-64	.23	.51	-.49	1.96	4.46**	.93
65+	.25	.85	.88	1.05	3.90**	.83
Income						
$0 - $14,999	-	-	-	-	-	-
$15,000 - $34,999	-.14	.50	.47	.89	-1.15	.50
$35,000 - $74,999	-.93	.46	.59	.60	-1.20	.91
$75,000+	-.78	.84	.13	1.23	.00	.00
Education						
11 or less	-	-	-	-	-	-
12 Years	-.33	.43	-1.27	.71	.74	.51
13 - 15 Years	-1.11	.60	-1.71*	.62	1.15	.58
16 + Years	-1.27*	.41	-2.32**	.56	-.37	.69
Length of Residency	.13	.08	.00	.18	-.10	.12
Acculturative Stress	.04	.08	.01	.19	.06	.11
Discrimination	.32	.37	.00	.51	.82	.45