Ethnic Variations in Immigrant Health:

A Gendered Analysis of Six Immigrant Groups

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Abstract

Leading explanations for immigrant health disparities derive mainly from studies of Mexican Americans. Recent case studies of newer immigrant groups suggest that these explanations may be less generalizable than previously believed. However, few studies examine this question systematically. Using new data from the 2000 through 2007 National Health Interview Surveys, we examine how well conventional theories of immigrant health apply to six groups of immigrants, with a focus on differences by region of birth and gender. The results reveal tremendous diversity in health patterns across immigrant groups. Immigrants from Africa and India have much more advantaged health profiles than Mexican immigrants and the gender gap in health for these groups is quite small. European and Middle Eastern immigrants, on the other hand, have health profiles more in line with Mexican immigrants and exhibit much greater disparities between men and women, the latter being more disadvantaged on all measures of health. We test possible explanations for such variability and suggest avenues of future research to more fully understand the increasingly diverse health trajectories of newer immigrant groups.

INTRODUCTION

Interest in immigrant health has flourished over the past two decades in tandem with the increased growth of newer ethnic populations (Carter-Pokras and Woo 1999; Hummer et al. 1999; Singh and Siahpush 2002). In 2007, immigrants comprised 12.5 percent of the U.S. population (38 million), up from only 4.7 percent in 1970 (9.5 million) (U.S. Bureau of the Census 2007). During the same period, the proportion of immigrants born in Europe plummeted from 75.4 to 13.7 percent, while the proportion born in Latin American (53.3%), Asia (26.7%), and Africa continues to climb (U.S. Bureau of the Census 2004). Such stark changes in the ethnic composition of America's demographic landscape have served as at catalyst for research on the health profiles of these newer groups because of their potential long-term impact on U.S. population health and the U.S. healthcare system.

To date, most research has focused on the experiences of Mexican immigrants due to the sheer size of the population and unusual juxtaposition of good health with low socioeconomic status, often referred to as the "Hispanic paradox." Of primary concern is that fact that Mexican immigrants appear to arrive healthier than native-born Americans but lose their health advantage over time (Antecol and Bedard 2006). This finding is usually explained by several complementary arguments related to the selective migration of healthy immigrants, healthier lifestyles in the countries of origin, increased risk-taking behavior in the U.S., and the erosion of social and cultural protective factors with increased duration in the U.S. (Markides and Eschbach 2005; Palloni and Arias 2004).

Recent case studies suggest these explanations may be more applicable to Mexican immigrants than to other immigrant groups, such as blacks (Read and Emerson 2005), Asians (Cho and Hummer 2001), and Middle Easterners (Read, Amick, and Donato 2005). For

example, in one of the only nationally-representative studies of Middle Eastern immigrants, Dallo and Borrell (2006) find that the prevalence of diabetes decreased with length of stay in the U.S.—the exact opposite of what is typically found in research on immigrant health (Landale et al. 1999; Singh and Siahpush 2002). In addition, research increasingly suggests that theories of immigrant health may be more appropriate for understanding the experiences of men than of women, in part because the foundation for these theories is based on studies that either control for gender or only look at health outcomes among men or women. A recent study by Antecol and Bedard (2006) highlight this point by finding that

Given these provocative findings, the current study examines how well conventional explanations of immigrant health apply to six groups of immigrants, with a focus on differences by region of birth[1] and gender. The analysis draws on data from eight waves of the National Health Interview Survey (2000-2007) to answer three related questions: 1) to what extent does the well-established pattern of better health among Mexican immigrants apply across a range of immigrant groups?; 2) to what extent does this vary by gender and health outcome?; and 3) to what extent do standard explanations (socioeconomic status, health behaviors) apply across and within groups?

Answers to these questions will contribute to research on immigrant health in several ways. First, we broaden existing research on immigrant health to encompass newer, lesser known groups of immigrants from diverse regions of the world. This allows us to identify inconsistencies between existing theories and emergent ethnic populations. Our goal is not to

[1] The National Health Interview Survey categorizes respondents into one of twelve groups based on their region of birth. The categories are: 1) the United States; 2) Mexico/Central America/Caribbean Islands; 3) South America; 4) Europe; 5) Africa; 6) Middle East; 7) Indian subcontinent; 8) Asia; 9) SE Asia; 10) Russia (USSR); 11) Elsewhere (including Canada); and 12) Unknown (includes refused, don't know, foreign-born but country not provided, and stopped answering.

dismiss prior theories, but rather to test their applicability across a range of groups. To that end, we use Mexican immigrants as a reference group to compare the profiles of six different groups based on their region of birth: Africa, Asia, Europe, India/Indian subcontinent, Middle East, and Southeast Asia. Second, we bring a "gender lens" to immigrant health research by differentiating the health profiles of immigrant men and women (Curran, Donato, and Garip 2006). In doing so, we demonstrate the need for expanded conceptual models of immigrant health to more adequately deal with the differential experiences of men and women. Finally, we focus on multiple measures of health status which highlights the need to consider both subjective and objective measures of health status in research on immigrant health.

BACKGROUND

Two major bodies of work shape this research: 1) research on immigrant health; and 2) theories of gender and migration. The first provides the basis for understanding the healthier profile of immigrants relative to U.S.-born groups, or the "healthy migrant" effect (Akresh and Frank 2008; Cho and Hummer 2001; Cho, Frisbie and Rogers 2004). The second points to the divergent processes of migration for men and women that leads to very different health profiles on arrival (i.e., differences in selectivity) and very different health trajectories over time (i.e., differences in acculturation and settlement) (Antecol and Bedard 2006; Curran et al. 2006; Hondagneu-Sotelo 1994, 1999; Kanaiaupuni 2000). Together, these literatures serve as the foundation for testing the applicability of existing theories to newer immigrant groups and for assessing gender differences in these populations.

Theories of Immigrant Health

Current research on immigrant health is borne from a vast literature on racial and ethnic health inequalities, most of which focuses on inter-group differences between U.S.-born blacks and whites (for reviews, see Williams and Collins 1995; Williams 2001). Rapid demographic changes brought about by immigration have motivated a new line of inquiry to examine health disparities between and within America's newer racial/ethnic and immigrant groups. In particular, the number of Asian, Hispanic, and Middle Eastern migrants has grown rapidly in the four decades following the Immigration Act of 1965, while the proportion of European immigrants has plummeted (U.S. Bureau of the Census 2004). These newer ethnic populations not only differ from the more culturally assimilated European populations, but they also differ among themselves, emigrating in different historical periods from diverse religious, political, social, and health backgrounds.

Of all groups, the Mexican case has received the most attention because of the large size of the immigrant population, the unusual combination of good health on arrival despite low socioeconomic status (also known as the Hispanic paradox), and the troubling trend of declining health with longer U.S. duration (Antecol and Bedard 2006; Palloni and Arias 2005). Explanations for the initial advantaged health status of immigrants focus on the positive selection of healthy immigrants (i.e., only those persons with good health can recoup the costs of migration), healthier lifestyles in the countries of origin, and cultural values of the sending countries that "buffer" immigrants from the adverse effects of U.S. lifestyle (Cho, Frisbie and Rogers 2004; Hummer et al. 1999; Landale et al. 1999). Explanations for the declining health with increased U.S. duration focus on increased risk-taking behavior, such as poor diet and exercise, and loss of protective factors, such as family support and cultural orientation (Markides and Eschbach 2005; Singh and Siahpush 2002).

To a lesser but growing extent, we are beginning to learn about the health trajectories of Asian immigrants (Cho and Hummer 2001; Frisbie, Cho, and Hummer 2001), black immigrants (David and Collins 1997; Read and Emerson 2005), and Middle Eastern immigrants (Dallo and Borrell 2006; Jaber et al. 2003; Read, Amick, and Donato 2005). Findings from these newer groups are not always consistent with research on Mexican immigrants. Historical differences in global relations between the U.S. and other regions of the world have resulted in very different migration patterns from Africa and Asia than from Europe and Mexico, which in turn, have shaped the social and demographic profile of these newer groups.

For some, like black immigrants from Africa, this has meant greater selection on education and health as their opportunities for migration to the U.S. are largely dependent on diversity and education visas (Read and Emerson 2005). For others, like immigrants from the Middle East, this has meant a polarization of the community into those who are highly selected on education and health (due to selection processes and migration policies) and those who are impoverished with very poor health outcomes (due to their refugee status from unstable and developing countries). In addition, the typical pattern of declining health with increased duration is inconsistent across groups, which again diverges from most studies on Mexican health (Dallo and Borrell 2006; Read and Emerson 2005). For example, Dallo and James (2000) found lower levels of acculturation to be associated with increased risk for hypertension among Arab women in Detroit; put differently, they found improved health with increased acculturation.

While no uniform pattern has emerged across immigrant groups, the one thing that is becoming clear is that existing theories of immigrant health do not equally apply to all cases. Though the evidence thus far is limited, there are several plausible explanations to account for divergent patterns of health among these newer immigrant groups. First, improvements in data

collection have allowed for more fine-grained distinctions among larger racial/ethnic populations, such as Asians and blacks, which are beginning to challenge images of the "model minority" and "healthy migrant." Second, many of these newer immigrant populations come from regions of the world that have very little in common with the Mexican case, both in terms of proximity to the U.S. and socio-demographic and cultural characteristics. Thus explanations based on the experiences of Mexicans may be less appropriate for understanding the experiences of these newer groups.

Gendered Patterns of Immigrant Health

The literature on immigrant health rarely makes explicit comparisons between the health profiles of immigrant men and women. Yet, women make up one-half the U.S. immigrant population and have immigration rates that have outpaced men's since the 1960s (U.S. Bureau of the Census 2004). Moreover, the push and pull factors associated with migration vary by gender, with men typically migrating for economic or educational purposes and women more frequently coming as members of larger family units (Curran et al. 2006; Hondagneu-Sotelo 1994). Thus the health profiles of immigrant women likely differ greatly from those of their male counterparts. We believe there are at least three major reasons to examine gender differences in immigrant health.

First, a limited number of recent studies suggest that the theories and concepts historically used to explain immigrant health (e.g. selectivity, health behaviors, etc.) may be more applicable to men than women. The majority of these studies focus on Mexican immigrants and find that women's motivations for migrating are more likely to be based on family and less likely to be based on employment than are men's, thus the likelihood of selectively migrating based on good health is weaker (Antecol and Bedard 2006; Lopez-

Gonzalez, Aravena, and Hummer 2005). In addition to arriving less healthy than their male counterparts, immigrant women appear to lose whatever health advantage they bring with them at a faster rate than do men (Antecol and Bedard 2006; Curran, Donato, and Garip 2006; Lopez-Gonzalez, Aravena, and Hummer 2005). In addition, women appear to access the medical care system more quickly and more frequently than immigrant men, which may contribute to their apparent elevated health burden—they appear sicker than men because they are more aware of their ailments (Gorman, Read, and Krueger forthcoming; Read and Reynolds nd).

Second, immigrant women are often more socio-economically disadvantaged than their male counterparts in their countries of origin and on arrival in the U.S., thus the burden of disease may fall particularly hard on their shoulders. We know from U.S.-based research that socioeconomic disadvantage is a key factor in explaining the poorer health of U.S.-born women relative to U.S.-born men across a range of health outcomes and regardless of racial/ethnic group (e.g., Gorman and Read 2006). In general, persons of higher social standing have better health because they have greater access to resources needed to prevent and cure disease and typically are better able to cope with stressful events over their lifetime (Marmot 2004; Williams and Collins 1995). Socioeconomic disadvantage increases exposure to stress and decreases feelings of personal control and self-esteem, and studies consistently find that U.S. women report more stressful life events and chronic stressors than men and lower levels of self-esteem and personal control (for a review see Denton, Prus and Walters 2004). For immigrant women, the additional stresses of migration and settlement make them particularly vulnerable to the negative health consequences of social disadvantage (Curran et al. 2006; Dion and Dion 2001).

Taken together, our review suggests that the health profile of immigrant groups likely varies considerably by region of birth and gender, which has implications for research on immigrant health and population health, more broadly. The analysis examines this possibility by asking three related questions: 1) to what extent does the well-established pattern of better health among Mexican immigrants apply across a range of immigrant groups?; 2) to what extent does this vary by gender and health outcome, both within and between groups?; and 3) to what extent do standard explanations (socioeconomic status, health behaviors) apply across and within groups?

DATA AND METHOD

Data

To test these hypotheses, we draw on merged data from the 2000-2007 National Health Interview Survey (NHIS), an annual multi-purpose health survey conducted by the National Center for Health Statistics and Centers for Disease Control and Prevention and administered by the U.S. Census Bureau. NHIS uses a multi-stage, stratified, cluster design to oversample the black and Hispanic populations and to obtain a nationally representative sample of the non-institutionalized civilian population. The U.S. Census Bureau conducts face-to-face interviews in a nationally representative sample of households, collecting information about the health and other characteristics of each member of the household.

The NHIS is particularly appropriate for this project for several reasons. First, the 2000 questionnaire was the first to include a question on region of origin, which categorizes all respondents into one of twelve categories depending on their country of birth, which they then collapse into region of birth. Due to the relatively small percentage of Americans born in countries outside of Mexico in any one year of the survey, we merge eight waves of the data.

Second, the NHIS contains rich data on a variety of health and health-related variables. This is especially true of the sample adult file. In addition to information on key demographic characteristics, the core sample adult questionnaire includes items on health conditions, health limitations, injuries, health care utilization, health insurance and health care access as well as a full range of heath behaviors.

The analyses are based on respondents born in Mexico (n=12,006), Europe (3,791), Africa (1,001), the Middle-East (674), Indian subcontinent (hereafter referred to as India; n=1,288), Asia (1,817) and Southeast Asia (2,577) who are age 18 and older. After eliminating cases that did not have valid data on each of the variables included in the most comprehensive model, the sample size was 23,154.

Dependent measures

Our primary dependent variables include several measures of health status. *Self-rated health* is assessed with the question, "Would you say that [person's] health in general is excellent, very good, good, fair, or poor?" Previous research has demonstrated that self-rated health is a valid predictor of health care utilization (Sundquist, Malmstrom and Johansson 1999), morbidity (Ferraro, Farmer and Wybraniec 1997), morbidity-related disability (Idler and Kasl 1995) and mortality (Idler and Benyamini 1997). Moreover, by relying on a subjective measure of health, measurement error associated with variations across social groups in medical documentation of illness is minimized. We have dichotomized this variable into excellent/very good/good health and fair/ poor health. Odds of the latter are modeled throughout.

Additionally, we include several objective measures of health status. We code *activity limitation* as '1' if the respondent stated that they were limited due to any one of a number of conditions that affect their daily lives. *Medical condition* '1' indicates whether the respondent

reported that they had ever been told by a doctor or other health professional that they had any of nine conditions: diabetes, ulcer, cancer, hypertension, angina, coronary heart disease, emphysema, heart disease, stroke and asthma. Similar to self-rated health, we model the odds of having activity limitation, hypertension or a medical condition, setting as the reference those who are free of such health concerns.

Independent measures

Our key independent variable is *ethnicity*, based on the respondent's region of birth: Mexico, Europe, Africa, Middle-East, India, Asia, and Southeast Asia.[2] Mexico is the reference category for all analyses. Gender is coded '1' for *female*, with *males* set as the reference category. We also control for several factors known to be associated with health, including socioeconomic status, lifestyle/behavioral characteristics, acculturation, and demographics. Given the importance of socioeconomic status for explaining differences in health, we include two measures that gauge social position. Educational attainment is coded into four categories: *less than high school (reference)*, *high school graduate*, *some college,* and *bachelor's degree or more.* Employment status is measured with a dummy variable for *employed '1'*.[3] Health insurance and access to care is closely to tied to social status, thus we include dummy variables

[2] *Europe* includes: Albania, Austria, Azores Islands, Belgium, Bosnia, Bulgaria, Corsica, Crete, Croatia, Czechoslovakia, Denmark, Finland, France, Germany, Great Britain, Greece, Herzegovina, Holland, Hungary, Iceland, Ireland, Italy, Liechtenstein, Luxembourg, Macedonia, Majorca, Malta, Monaco, Montenegro, Netherlands, Norway, Poland, Portugal, Prussia, Romania, Scotland, Serbia, Sicily, Slovakia, Spain, Sweden, Switzerland and Yugoslavia. *Africa* includes: all countries on the African continent, plus the Canary Islands, Comoros, Madagascar and the Madeira Islands. *Middle East* includes: Aden, Arab Palestine, Arabia, Armenia, Bahrain, Cyprus, Gaza Strip, Iran, Iraq, Israel, Jordan, Kuwait, Syria, Lebanon, "Middle East", Oman, Palestine, Persia, Qatar, Saudi Arabia, Syria, Turkey, United Arab Emirates, West Bank and Yemen. *Indian Subcontinent* includes: Afghanistan, Bangladesh, Bhutan, British Indian, Ocean Territory, Ceylon, East Pakistan, India, Maldives, Nepal, Pakistan, Sri Lanka, Tibet and West Pakistan. *Asia* includes: Asia, Asia Minor, China, Japan, Mongolia, North Korea, South Korea. *Southeast Asia* includes: Borneo, Brunei, Burma, Cambodia, Christmas Island, Hong Kong, Indonesia, Laos, Malaysia, Myanmar, North Vietnam, Philippines, Singapore, South Vietnam, Taiwan and Thailand.

[3] While we would like to have included family income in our models, changes to the income categories over the study period as well as high rates of non-response resulted in substantial sample reductions with incorporation of the NHIS income variable. In analyses available upon request, regressions were conducted including family income as a control variable. The substantive findings mirrored those presented here.

for health insurance (*'1' no coverage, '0' coverage*), usual place for care (*'1' yes, '0' no*), and interaction with the health care system (*'1' seen a doctor in prior 12 months, '0' have not seen a doctor in prior 12 months'*).

In terms of lifestyle and health behaviors, we code alcohol consumption into *never drank (reference), former drinker and current drinker*. Tobacco use is coded similarly as *never smoke (reference), former smoker and current smoker*. Body Mass Index (BMI) is coded into four categories: *normal weight* ($18.5 \leq BMI < 25.0$, reference), *overweight* ($25.0 \leq BMI < 30.0$), and *obese* ($BMI \geq 30.0$). With regard to family status, we include a continuous measure of the number of household members and a dummy variable for marital status ('1' *currently married or cohabiting*, '0' all other responses). Finally, we include a*ge* and *age-²* in all models as well as dummy variables representing the survey year.

Analysis

We merged the NHIS person and sample adult files to obtain the most comprehensive data on each sample adult and then constructed descriptive statistics for each of the immigrant groups. The analysis presents chi-square tests of difference between the various immigrant groups and Mexican-born respondents (Table 1). Next, we conducted a series of bivariate binomial logistic regressions estimating the impact of ethnicity on the odds of fair or poor self-rated health, activity limitation, hypertension and the presence of a health condition. Covariates were added in blocks. All analyses used two-tailed tests of significance in Stata Version 10.

RESULTS

Table 1 highlights key differences among the six groups by region of birth. Compared to Mexican immigrants, only Middle-Eastern immigrants do not significantly differ in terms of

their self-reported health (13.1% report their health as 'fair or poor' compared to 13%). All of the remaining immigrant groups enjoy significantly lower percentages of fair or poor health as compared to Mexican immigrants. In terms of activity limitation, both Europeans (14%) and Middle-Easterners (11.7%) have significantly higher rates than Mexican immigrants (7.1%), whereas African (4.7%) and Indian (3.8%) immigrants have significantly lower rates. All groups excepting Indian, from whom there is no significant difference, report higher rates than Mexican immigrants of suffering a medical condition, ranging from 2.5% higher (African-born) to 19.8% higher (European-born). Taken alone, these results provide conflicting evidence on the healthy migrant effect and indicate the need to differentiate between subjective global assessments of health and more objective measures health.

What might account for these observed differences by ethnicity? Demographics, acculturation, socioeconomic factors and access to health care are likely important, given their role in explaining gender health disparities among U.S. adults (Gorman and Read 2006). All groups are significantly older, on average, than are the Mexican immigrants in our sample with the exception of African and Indian immigrants whose mean age is not statistically different. All groups have significantly smaller mean family sizes than Mexican immigrants. There are significantly more females among the European (56.6%), Asian (57.2%) and Southeast Asian (54.6%) groups than among the Mexican group (51%), but fewer among the African (44.9%), Middle-Eastern (47.6%) and Indian (41.7%) groups. Three of the immigrant groups (African = 48.7%; Middle-Eastern = 58.5% and Asian = 60%) have a significantly smaller percentage of married respondents than does the Mexican group. Only Indian immigrants have a significantly higher percentage of married respondents (71.5%).

On average, African and Indian immigrants have similar residency patterns as Mexican immigrants based on the percentage of respondents who indicated that they had lived in the United States less than five and more than 15 years. In contrast, Asian, Southeast Asian and European immigrants have been in the United States slightly, moderately and substantially longer than Mexican immigrants respondents respectively, all at a statistically significant level. All groups have significantly fewer non-citizens among them than Mexican immigrants.

With respect to education, all immigrant groups have significantly lower percentages of respondents who lack a high school degree. There are more Europeans and fewer Indians (18.4%) who have only a high school education (16%) as compared to Mexicans (17.9%). All groups have higher rates of college participation excepting the Indian-born, but this is due largely to the fact that a heavy majority of Indian immigrants possess a Bachelor's degree or more. While Indian immigrants have a college completion rate (70.7%) nearly twenty times the rate for the reference group (3.8%), all other immigrant groups also maintain a significantly higher percentage of college completers than that of the Mexican group. Regarding employment, European (55.1%), Middle-Eastern (59.2%) and Asian (59.8%) immigrants have moderately, but significantly, lower rates of labor force participation than Mexican immigrants and African (73%), Indian (69.6%) and Southeast Asian (67.1%) immigrants have slightly higher rates. All immigrant groups have lower rates of being uninsured. Similarly, each group has a higher percentage of respondents who have a usual place to go for medical care and a lower percentage of respondents who have not seen a doctor in the 12 months prior to the survey, all of which may influence their health outcomes.

Looking at health behaviors, all immigrant groups have lower rates of being overweight or obese than Mexican immigrants. Particularly noteworthy are the low rates among Asians

(overweight = 21.9%; obese = 3.9%) and Southeast Asians (overweight = 26.4%; obese = 7.7%) relative to Mexicans (overweight = 42.6%; obese = 24.3%). There are significantly more European than Mexican immigrants who are current drinkers and smokers (drinking = 70% versus 44.5%; smoking = 18.5% versus 13.6%). Indian immigrants are *less* likely to do both (drinking = 36.3% versus 44.5%; smoking = 8.2% versus 13.6%). There are more Asian than Mexican immigrant drinkers (47% as compared t 44.5%) and more Middle-Eastern immigrant smokers (21.8 as compared to 13.6%).

Table 2 examines these relationships in the multivariate context. All models control for survey year, age and age-squared. The tables highlight our main variables of interest: ethnicity, acculturation, socioeconomic status, access to care, and health behaviors. Table 2 shows that the bivariate relationships seen in Table 1 holds once survey year and age are introduced (Models 1): all immigrant groups have significantly lower odds of fair or poor self-rated health than do Mexican immigrants. Controlling for survey year and age, Middle-Eastern immigrants also now have a lower odds of reporting fair or poor self-rated health. Asian, Indian and European immigrants remain at lower odds of fair or poor self-rated health when adding the full set of covariates in Model 2, although there is some attenuation of the effect of ethnicity between models for each of these groups.

The regressions for activity limitation indicate that, with the addition of survey year and age as covariates, African and Indian immigrants are at lower risk of limitation than their Mexican counterparts. This echoes the findings in Table 1. Asians, Southeast Asian and European immigrants are significantly less likely to report an activity limitation than Mexican immigrants, in contrast to Table 1 where Europeans had higher rates of limitation and both Asian groups had statistically indistinguishable rates. Although they had statistically higher rates in

Table 1, Middle-Easterner's odds of activity limitation are not significantly different than Mexican immigrants in Model 1. When incorporating the remaining control variables, only Asian and Middle-Eastern immigrants have significantly different odds of activity limitation than do Mexican-Americans. Asian immigrants report lower odds, similar to the findings in Model 1. Middle-Eastern immigrants report elevated odds, similar to the findings in Table 1 and different from the findings in Model 1.

Regarding presence of a medical condition, African and European immigrant groups each have higher odds of a medical condition than do Mexican immigrants. This is similar to what was shown in Table 1. Southeast Asian and Middle-Eastern immigrants, on the other hand, converge with Mexican immigrants somewhat. The odds of a medical condition are not significantly different from the reference category, despite the fact that Table 1 showed both groups maintaining higher rates than Mexican-Americans. Indian-born respondents are at higher odds and Asian-born respondents are at lower odds of a medical condition, contrary to what was suggested by Table 1. In Model 2, we see that, ceteris paribus, all groups excepting Asian and Middle-Easterner immigrants at higher odds of a medical condition than are Mexican immigrants. The findings in this final model are similar in direction to those found in Model 1, although the dummy variable for Southeast Asian becomes significant where it was not in the initial model. Neither Asian nor Middle-Easterner immigrants have significantly different odds of a medical condition than Mexicans.

Summary for results thus far (in progress):

Looking at the full model we see that when compared to Mexican immigrants:

1. Activity limitation:
    a. European and ME look more like Mexican
    b. Asian healthier
    c. African, SE Asian, and Indian no different

2. Medical conditions:
    a. Asian and ME only 2 groups not to significantly differ from MA
    b. All other groups are more likely to report a medical condition
    c. Interesting because likely due to their greater access to care and thus diagnosis
    d. Asians likely just healthier and ME maybe because they don't have access to care similar to MA (speculating a little here, but good for discussion/conclusion)

3. Self-rated health:
    a. ME and SE Asian no different
    b. All rest healthier

Analyses by gender (in progress)*

DISCUSSION OUTLINE

Major findings:

1. There is great diversity in the health profiles of immigrants by their region of birth and gender. We need expanded conceptual frameworks of immigrant health to account for variations across and within ethnic groups and to deal with differences between men and women. This requires improved data collection efforts.
2. We need to include both subjective and objective measures of health, as we found inconsistencies across health measures.

Limitations:

1. Inability to account for differences by country of birth (limited to regional data); nevertheless a move in the right direction to more accurately define the general term "immigrant."
2. Lack of data from countries of origin, tied to limitation #1.
3. Add more here

Future directions/implications:

1. Need to continue to disaggregate what we mean by "immigrant health" (conceptually and empirically) to account for diversity within this broad categorization. We highlight region of birth and gender as two important ways to do this.
2. Need to continue to search for the mechanisms that lead to health disparities between and within immigrant groups. For example, if women appear sicker than men in part because they are more likely to visit a physician and be diagnosed with an ailment, then policies will need to focus on introducing men to the health care system at much earlier, more preventative, and less costly stage of the migration and settlement process.

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Table 1. Percent sample characteristics by ethnicity, NHIS 2000-2007

	Mexican	European		African		Middle-Eastern		Indian		Asian		Southeast Asian	
Health status													
Fair/poor health	12.96	11.24	***	6.49	***	13.06		4.81	***	8.86	***	9.31	***
Activity limitation	7.13	14.03	***	4.7	***	11.72	***	3.8	***	7.21		7.64	
Hypertension	14.02	25.67	***	15.08		16.17		12.81		17.12	***	19.48	***
Medical condition	23.91	43.71	***	26.37	*	29.67	***	24.46		28.51	***	31.7	***
Demographics													
Female	51.03	56.85	***	44.86	***	47.63	*	41.69	***	57.24	***	54.6	***
Married	62.67	61.16		48.65	***	58.46	**	71.51	***	59.99	**	61.16	
Acculturation status													
Less than five years	15.33	9.36	***	25.47	***	16.91		29.35	***	17.5	**	11.21	***
Five to fourteen yrs.	35.65	14.64	***	38.66	*	28.93	***	38.04	*	27.63	***	27.71	***
Fifteen yrs. plus	49.03	76	***	35.86	***	54.15		32.61	***	54.87	***	61.08	***
Non- Citizen	74.9	30.97	***	58.74	***	37.39	***	59.7	***	46.23	***	33.95	***
Socioeconomic status													
Education level													
Less than high school	68.15	14.59	***	9.99	***	16.77	***	7.3	***	11.23	***	14.44	***
High school degree	17.92	24.95	***	15.98		19.58		9.78	***	18.44		18.32	
Some college	10.11	27.78	***	32.37	***	20.03	***	12.27		20.09	***	25.69	***
Bachelor's degree +	3.82	32.68	***	41.66	***	43.62	***	70.65	***	50.25	***	41.56	***
Employed	63.45	55.13	***	73.03	***	59.2	**	69.64	***	59.82	***	67.09	***
Access to care													
No health insurance	54.59	12.13	***	25.17	***	21.66	***	17.39	***	20.14	***	14.01	***
Usual place for care	60.63	85.99	***	78.62	***	80.12	***	80.12	***	79.47	***	85.14	***
Seen doctor past 12 mths	43.83	68.77	***	60.24	***	62.46	***	58.85	***	57.29	***	60.69	***
Health behaviors													
Body mass index													
Overweight	42.6	36.35	***	37.16	***	36.8	***	32.3	***	21.9	***	26.39	***
Obese	24.26	16.78	***	15.38	***	15.58	***	7.53	***	3.91	***	7.68	***
Alcohol use			***		***		***		***		***		***
Never drank	43.69	18.31	***	48.35	***	45.85		58.46	***	43.81		46.29	**

Current drinker	44.54	70.01	***	43.26		46.14		36.34	***	47	*	45.75	
Tobacco use													
Never smoked	74.31	54.39	***	76.12		60.24	***	82.76	***	72.54		75.2	
Current smoker	13.62	18.49	***	12.49		21.81	***	8.15	***	14.69		12.88	
Family size (mean)	3.67	3.01	***	2.61	***	2.73	***	2.84	***	2.43	***	3.01	***
Age (mean)	38.46	51.4	***	38.29		43.15	***	38.39		45.11	***	42.98	***

*** p<0.01, ** p<0.05, * p<0.1

Table 2. Odds ratios from logistic regression models predicting health outcomes among immigrants, NHIS 2000-2007 (n=23,154)

	Self-rated health		Activity limitation		Medical condition	
	M1	M2	M1	M2	M1	M2
Nativity						
Asian (Mexican)[a]	0.389***	0.756***	0.531***	0.720***	0.794***	1.045
	(0.0359)	(0.0807)	(0.0563)	(0.0896)	(0.0504)	(0.0785)
African	0.457***	0.834	0.679**	0.927	1.189**	1.293***
	(0.0615)	(0.122)	(0.108)	(0.166)	(0.0955)	(0.117)
Southeast Asian	0.489***	0.879	0.503***	0.927	1.040	1.370***
	(0.0376)	(0.0794)	(0.0785)	(0.163)	(0.0769)	(0.119)
Indian	0.316***	0.718**	0.750***	0.981	1.137**	1.343***
	(0.0431)	(0.109)	(0.0662)	(0.105)	(0.0595)	(0.0851)
European	0.364***	0.613***	0.737***	0.921	1.195***	1.181***
	(0.0241)	(0.0520)	(0.0510)	(0.0869)	(0.0550)	(0.0714)
Middle-Eastern	0.720***	1.092	1.201	1.342*	0.995	1.009
	(0.0897)	(0.150)	(0.165)	(0.208)	(0.0963)	(0.106)
Demographics						
Female		0.944		0.713***		1.092**
		(0.0508)		(0.0460)		(0.0421)
Married		0.728***		0.488***		0.843***
		(0.0376)		(0.0308)		(0.0332)
Family Size		0.988		0.900***		0.984
		(0.0149)		(0.0187)		(0.0113)
Acculturation Status						
Five to Fourteen Yrs. (<Five Yrs.)[a]		1.076		1.335**		0.994
		(0.103)		(0.189)		(0.0634)
Fifteen Yrs. Plus		1.231**		1.842***		1.156**
		(0.121)		(0.261)		(0.0776)
Non- Citizen		0.965		0.954		0.905**
		(0.0550)		(0.0662)		(0.0382)
Socioeconomic status						
Education level (< high school)[a]						
High school degree		0.621***		0.768***		0.879**
		(0.0419)		(0.0631)		(0.0454)
Some college		0.599***		0.768***		0.997
		(0.0454)		(0.0688)		(0.0555)
Bachelor's degree +		0.378***		0.605***		0.913
		(0.0326)		(0.0585)		(0.0526)
Employed		0.430***		0.166***		0.740***
		(0.0229)		(0.0120)		(0.0292)
Access to care						
Uninsured		1.189***		0.732***		1.117**
		(0.0735)		(0.0622)		(0.0506)
Usual place for care		1.068		1.252**		1.467***
		(0.0729)		(0.122)		(0.0730)
Seen a doctor in past 12 mths		1.935***		2.349***		2.000***
		(0.106)		(0.168)		(0.0758)
Health behaviors						
Body mass index (normal)[a]						

Overweight	1.080	0.877*	1.347***
	(0.0608)	(0.0596)	(0.0543)
Obese	1.717***	1.439***	2.255***
	(0.107)	(0.110)	(0.108)
Tobacco use (never)[a]			
Former smoker	1.366***	1.259***	1.380***
	(0.0871)	(0.0936)	(0.0669)
Current smoker	1.491***	1.624***	1.221***
	(0.106)	(0.144)	(0.0631)
Alcohol use (never)[a]			
Former drinker	1.153**	1.641***	1.379***
	(0.0795)	(0.132)	(0.0789)
Current drinker	0.723***	0.733***	1.021
	(0.0414)	(0.0521)	(0.0421)
Constant	0.00489***	0.0116***	0.0134***
	(0.00128)	(0.00381)	(0.00248)

[a] denotes reference category
*** p<0.01, ** p<0.05, * p<0.1