Investigating the Refugee Health Disadvantage among U.S. Immigrants
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Abstract:

Much health disparities research focuses on race and ethnicity, but nativity has proved crucial in explaining the immigrant "health advantage" relative to native-born Americans. Yet, there is little research on how immigrant's visa status affects their health outcomes. Some immigrant subgroups, such as refugees, may actually have an initial health *disadvantage*. We aim to explore the differences in health by visa category subgroups (refugees vs. non-refugee immigrants) using data from the 2003 New Immigrant Survey and to investigate potential causes of health disparities across these subgroups. Our preliminary findings suggest that refugees have a significant and strong health disadvantage across multiple health outcomes. This disadvantage also appears in regression models controlling for many other potential factors affecting health. This suggests the need for better longitudinal research on refugee health, but also that health care providers and social workers need to adopt different outreach and education models for refugee communities.

Investigating the Refugee Health Disadvantage among U.S. Immigrants

Introduction

Much health disparities research focuses on race and ethnicity, but *nativity* has proved crucial in explaining the "epidemiological paradox," whereby Latinos have a "health advantage" compared to native-born Americans despite their lower socioeconomic status (Hummer et al. 2007; Lara et al. 2005; Palloni and Arias 2004; Jasso et al. 2004). Moreover, some immigrant subgroups, such as refugees, may actually have an initial health disadvantage. We aim to disaggregate immigrants into visa category subgroups (refugees vs. non-refugee immigrants). Thus we seek to "unpack" the influence of immigration status on a broad array of health outcomes using regression analysis of the New Immigrant Survey (NIS). We aim to compare and contrast the refugee health disadvantage to that of non-refugees to establish the causes of these disparities across subgroups to contribute to both theoretical and empirical knowledge of the social determinants of health.

There is scant research on refugee health using nationally representative data. We will help fill this gap by analyzing a range of health outcomes for all refugees, and African refugees in particular. Refugees are likely to fare worse than other immigrants, and thus research on their overall health and well-being is particularly important. Using the NIS, which has a direct measure for visa status, we will compare refugees and non-refugee immigrants across various health outcomes to establish whether or not refugees have an initial health disadvantage, and to examine the impact of selection, acculturation, health care access, and health behaviors on various health outcomes.

To be eligible for refugee or asylum status in the United States, an applicant must meet the definition of a refugee: a person who is unable or unwilling to return to his or her country of nationality (or if an applicant is considered "stateless," his/her country of last habitual residence) because of persecution or a well-founded fear of persecution on account of race, religion, nationality, membership in a particular social group, or political opinion. An applicant for refugee status is outside the U.S., while an applicant seeking asylum status is either in the U.S. or at a port of entry. The U.S. also allows in-country processing of refugee status in certain cases (e.g., in 2013, Cuba, former Soviet republics, and Iraq were eligible) (Martin and Yankay 2014).

Refugee admissions ceilings and regional allocations are established every year by the President in consultation with Congress. In 2013, the total number of refugees authorized for admission was 70,000, with 46 percent coming from the Near East/South Asia region (primarily Iran, Iraq and Bhutan). Refugee admissions to the U.S. are on the rise again, after a nadir of fewer than 30,000 admitted annually in 2002 and 2003, yet the totals are still well below the over 120,000 admitted in 1990 (Martin and Yankay 2014).

Nearly half of all refugee arrivals in 2013 came from just three countries: Iraq, Burma, and Bhutan. This pattern was the same during the last three years. Other major sending countries of refugees include: Somalia, Cuba, Iran, the Democratic Republic of Congo, Sudan, Eritrea, and Ethiopia (Martin and Yankay 2014). Asylees, who are already resident in the U.S., have a different makeup; out of a total of about 25,000 aslyees, about half are from the People's Republic of China and Egypt, with the other half made up of nationals of Ethiopia, Nepal, Syria, Venezuela, Iran, Russia, Haiti, and Iraq. Refugees and aslyees are five and ten years younger, respectively, on average than the native-born U.S. population (median ages: refugees=25; asylees=30; native-born=35) (Martin and Yankay 2014).

All of this data makes it clear that many refugees are coming from countries where war is ongoing, intermittent, or has just ended, and therefore their health status is likely to be affected by this exposure to violence. They may also have spent time in refugee camps and possibly have suffered malnutrition or exposure to disease. Refugees may have an initial health disadvantage, but their health may also improve over time. In policy decisions, interventions, and research, refugees should not be subsumed within larger immigrant populations since their reasons for leaving their native country, their socioeconomic circumstances during flight and in the U.S., and their legal status are all significantly different from those of other immigrants.

In this paper, we are interested in comparing refugee and non-refugee immigrant health status across three broad measures: self-reported health, chronic diseases, and functional limitation. We first briefly review the scarce research on refugee health in the U.S. Then we lay out the theoretical underpinnings of the explanatory models of refugee and immigrant health and describe our hypotheses. Next we explain our data, variables, and methodology. This is followed by our descriptive and regression results, and finally we draw some conclusions and discuss the implications. (Please note: this research is in progress and the paper will be more developed by the time of the 2015 Population Association of America meeting.)

Previous Research on Refugee Health

Public health concerns for refugees are generally focused on infectious diseases and basic nutritional deficiencies. The Centers for Disease Control and Prevention (CDC) recommends that all refugees have their blood and urine screened upon arrival, primarily to diagnose anemia, sexually transmitted infections, and other infectious diseases like schistosomiasis. Only older adults (generally 35+) are suggested to receive blood lipid screenings, cancer screenings or other tests to detect chronic diseases such as heart disease, diabetes, hypertension, cancers, and renal disease (CDC 2012). However, newer research on refugee populations indicates that health care providers and public health officials should be more concerned about chronic diseases (e.g., diabetes, obesity, cardiovascular disease and hypertension) and healthy lifestyle factors, particularly as the epidemiological transition proceeds apace across the globe (Yanni et al. 2013; Dookeran et al. 2010; Culhane-Pera et al. 2009).

Much of the research on refugee health has focused on access to and/or barriers to access to health care. In a convenience sample of primarily African male refugees and asylum seekers in New York City, researchers found important and interrelated barriers to accessing health care, including mental illness and distrust, lack of knowledge about Medicaid eligibility, poor English and other barriers to navigating a complex health care system (Asgary and Segar 2011). Some studies have also examined refugees' knowledge of health and healthy behaviors. For example, Barnes and Almasy (2005) found that refugees from Bosnia, Iran, and Cuba had some knowledge of healthy diet and exercise, but were mixed in terms of whether they had experienced positive or negative changes in health and health behaviors since arriving in the U.S.

In a larger study of a more diverse group of recently arrived refugees, quite a lot of diversity in general health and healthy behaviors was found between different ethnic groups (Barnes et al. 2004). This—among many other studies of immigrant health—suggests that effective health interventions may need to be culturally and linguistically specific. In fact, much of the extant literature on refugee health focuses on the need for cultural competence among care providers and the importance of cultural attitudes and beliefs about health for refugees (and immigrants more generally) (Culhane-Pera et al. 2007). Nearly all of these studies are based on focus groups and in-depth interviews with refugees and health care providers, and/or make use of

administrative health records in clinical settings. There is little to no research examining refugee health using representative survey data.

Our findings will provide baseline knowledge about how refugees' health is similar to and/or different from non-refugee immigrants. Furthermore, in our main theoretical contribution to the research literature, we move the research on immigrant health forward by suggesting how particular characteristics of immigrants and refugees, in terms of migrant selection (e.g., socio-economic status, education), acculturation (e.g., years in the U.S., citizenship), health care access (e.g., insurance) and health behaviors (e.g., smoking), serve to either strengthen or weaken these differences between and among visa category subgroups over time. Refugees may come to the U.S. while dealing with the effects of physical and mental trauma and are likely to fare worse than other immigrants. Determining whether or not this initial (presumed) health disadvantage is ameliorated over time or how it is mediated by other factors is a key motivation for this research.

Potential Explanations for Refugee Health: Theoretical Framework and Hypotheses

Although there is very little nationally-representative research on differences in health by refugee status (Akresh and Frank 2008), refugees are likely to have an initial health disadvantage but their health may improve over time. We explore five theories about the relationship between visa status and health, including: selection, acculturation, health care access, and health behaviors. Using the New Immigrant Survey (NIS), and direct measure of visa status, we will first establish if a health disadvantage exists for refugees compared to non-refugee immigrants. We will compare self-reported health status (SRHS), chronic conditions, and functional limitations of refugees with non-refugee immigrants. (In future work we will also be comparing obesity and BMI between refugees and non-refugees.) We examine the influence of socio-demographic selection, acculturation, health care access, and health behaviors in explaining differences in the health of these groups in the NIS and explore whether the effects of these explanations on health differ by visa status. This approach is unique, because there are very few studies examining health differences between refugees and non-refugees using nationally representative survey data in the U.S. (Pandey and Kagotho 2010).

Refugee Status

Visa status in this analysis serves as a proxy for exposure to war, trauma, and psychosocial stress from being a refugee. Although not all refugees have directly experienced violence, all must have at least experienced the fear of violence and/or persecution, and most will have lived through a war or political/religious/ethnic cleansing campaign in which friends, neighbors, and relatives were attacked. These experiences can have enormous impacts on both physical and mental health. Moreover, refugees *may* have had limited access to health care or have been exposed to malnutrition and disease during their flight or during their stays in refugee camps. Thus, we expect that refugees will have a health disadvantage relative to non-refugee immigrants, before controlling for other factors.

Nativity, Race and Ethnicity

We expect that African refugees are more likely to have a health disadvantage than refugees from other parts of the world due to the relative deprivation and disease profile of sub-Saharan Africa. Moreover, Africans' greater distance to the U.S. and newer migrant networks also disadvantage them relative to Latin American-born immigrants and other immigrants (our comparison groups). We also control for race and Hispanic ethnicity in the regression models, as these might affect access to health care if discrimination is at play, although these will likely not differ for refugees and non-refugee immigrants.

Selection

The immigrant health advantage is often attributed to *immigrant selection*; those who choose to emigrate are a selective group in terms of characteristics that are linked to both the propensity to move as well as better health outcomes, such as age, education, and marital status (Jasso et al. 2005; Palloni and Arias 2004). Selection works in the opposite way for most refugees, who are coming from war-torn countries and difficult socioeconomic and political circumstances, and are therefore likely quite disadvantaged. We expect that, despite their young average age, refugees will be *negatively* selected relative to non-refugee immigrants and have poor health upon arrival in the U.S. Controlling for other selection factors, such as education,

current employment and poverty status might be expected to partially offset these initial negative selection effects.

Acculturation

The major finding from the literature on acculturation and assimilation is that most new immigrants tend to have healthier behaviors when they first arrive compared to the native-born. Several studies suggest that immigrants' origin cultures operate to lower stress levels and promote healthy lifestyles because of the protective cultural strength of family and social networks (Landale and Oropesa 2001; Scribner and Dwyer 1989). However, over time among the first generation of immigrants, and later, among the second generation, a pattern of "negative acculturation" toward poorer health outcomes, as immigrant groups take on American cultural values and behaviors, has been theorized to explain the observed convergence of disparate health outcomes (Elo et al. 2011; Bennett et al. 2007; Hummer et al. 2007). This negative acculturation may also be viewed as a part of a "segmented assimilation," in which some immigrant groups (e.g., the Asian-born) move into the mainstream of the destination country and have higher socioeconomic status, while others (e.g., the Latin American-born), perhaps due to poorer socioeconomic status on arrival as well as discrimination, move into the lower class or subcultures of the destination country and have poorer outcomes overall (Alba and Nee 1997; Portes and Rumbaút 2001).

Although we cannot directly measure acculturation because of lack of longitudinal data, we do have measures of English language ability and years of exposure in the U.S. Acculturation may be measured by political or cultural integration, which are proxies for convergence to U.S. lifestyles and health behaviors, and includes measures such as English language acquisition and U.S. citizenship (Okafor et al. 2012; Cabassa 2003). These are not perfect measures, as they really only measure exposure to the native culture, but as seen in much of the immigration literature, they are often the best available measures when using large, national-level data. Language is arguably one of the best measures of acculturation available.

We expect that although refugees may arrive with a health disadvantage, and so, contrary to other immigrants, they will likely experience *positive* improvements in health over time. Although they may also experience negative acculturation in terms of changing lifestyle and

health behaviors, their initial health disadvantage is likely so great that they will show improvements over time even while other immigrant groups are declining. Nevertheless, there is some evidence that the process of acculturation may be quite important for determining refugee health outcomes and may indicate negative acculturation processes at work. For example, in a study of body mass index (BMI) among African refugee children, researchers found that BMI increased more rapidly among those children who arrived in the U.S. at a very young age than it normally does for young native-born children (Hervey et al. 2009).

Health Insurance

There is a large literature showing that lack of health insurance is a major barrier to access to health care, particularly for immigrants and minorities (see, for example, Ayanian et al. 2000; Betancourt et al. 2004; Institute of Medicine 2009). Contrary to the immigrant health advantage literature, many immigrants who lack access to care are also more likely to have poorer health. In a comprehensive review of the literature, DeRose et al. (2009) found that noncitizens and their children were less likely to have health insurance and a regular source of health care and had lower health care utilization rates than the U.S.-born.

The U.S. government allocates funds annually for a comprehensive and coordinated program of resettlement of refugees and asylees (Refugee Act of 1980, PL. 96-212), who are eligible to receive public assistance, including Medicaid and State Children's Health Insurance Program (SCHIP) (Personal Responsibility and Work Opportunity Reconciliation Act of 1996 IPRWORA], PL. 104-193). Therefore, we might expect refugees to have greater access to health care (due to enrollment in Medicaid insurance). Despite their eligibility for SCHIP and Medicaid, however, Pandey and Kagotho (2010) found that 67% of refugees and asylees did not have health insurance (NIS 2003). Although they were far more likely to have health insurance than diversity visa or family reunification immigrants, there is clearly a lack of communication and understanding among refugees about eligibility or how to obtain coverage.

Health Behaviors

Negative acculturation might result in the adoption of poor health behaviors such as smoking (Kimbro 2009; Page 2007). Many immigrant origin countries are at earlier stages of the

tobacco epidemic compared to the U.S., where smoking rates are higher; research has also shown that immigrant often families have anti-smoking attitudes (Acevedo-Garcia et al. 2005, Singh and Siahpush 2002). Therefore, some new immigrant groups are less likely to smoke that the native-born population, although there is substantial uptake of smoking with longer duration in the U.S. (Singh and Siahpush 2002). With the exception of Russia and Nepal, smoking rates in most refugee- and asylee-sending countries are below 10% and therefore, much lower than in the U.S. (25% for females and 33% for males, respectively) (World Health Organization 2009). We do not expect to see a difference in the effect of smoking for refugee and non-refugee immigrants.

Data and Methods

Data

For this analysis, we use the New Immigrant Survey (NIS), a nationally representative, longitudinal study of international migrants and their children that provides data to tackle empirical questions about the immigrant experience in the United States during the first decade of the 21st century (Jasso et al. 2006). More precisely, the NIS is a multi-cohort prospective-retrospective panel study of new legal immigrants and their offspring based on nationally representative samples of the administrative records, compiled by the U.S. government (via the extinct Immigration and Naturalization Service or INS). [1] We use the first full cohort (NIS-2003-1), which sampled immigrants between May and November 2003; due to our focus on refugees, we look at the adults sample in the restricted-use contractual dataset (N=8,573). The NIS-2003-1 adult sample has a response rate of 68.6 percent. [2] Our interest in comparing the living

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[1] According with the website where public use dataset is located, the "NIS is supported by the National Institutes of Health (NIH)/ National Institute of Child Health and Human Development (NICHD)/ National Institute on Aging (NIA)/Office of Behavioral and Social Science Research (OBSSR) under grant HD33843, the National Science Foundation (NSF) under grants SRS-9907421 and SES-0096867, the U.S. Immigration and Naturalization Service (now the U.S. Citizenship and Immigration Services). Additional support was provided by the Office of the Assistant Secretary for Planning and Evaluation (ASPE) and the Pew Charitable Trusts. This collaborative research project spans four institutional settings - RAND, Princeton University, New York University, and Yale University" (see The New Immigrant Survey - Princeton University, 2006).

[2] We did not yet use the second wave of the data, as it was just released this summer and we have not yet gained access to the restricted data from that wave. We are in the process of renewing our restricted data contract, in which we will request the second wave data, so that we may incorporate a longitudinal analysis in this paper.

conditions and individual health of refugees *vis-à-vis* legal migrants in America resonates with some of the research questions and specific aims for which the NIS was designed.

The NIS constitutes 19 sections corresponding with six main areas: health measures, individual's background, family, financial transfers, economic aspects, and housing environment. To select the variables for this paper, we looked at all the main areas in NIS-1-2013 but we particularly paid attention to questions associated with five sections: demography, employment, health, insurance, and migration. The main independent variable of interest is visa status, which was constructed from the variable *visacatmo* making a distinction between refugees and non-refugee immigrants. Those identified as 'REFUGEES, ASYLEES, PAROLEES' –according to the categories of INS immigrant class of admission in the adult sample—were recoded as refugee immigrants, and those identified with the other categories or visas (e.g. 'SPOUSE OF U.S. CITIZEN' or 'PARENT OF U.S. CITIZEN' among others) were recoded as non-refugee immigrants. For future research, we intend to use the restricted-use National Health Interview Survey (NHIS) data, which we will soon gain access to at the New York Census Research Data Center. The NHIS data are not shown in this preliminary draft.

Dependent Variables

We analyze three key health outcomes in this paper. The first is a measure of self-reported health status (SRHS), which is a subjective measure asked to all the individuals in the NIS. Participants rated their general health perception on a five-point scale: excellent, very good, good, fair, or poor. We use it as a dichotomous outcome variable measuring poor/fair health status, coded 1 for fair or poor health and coded 0 for excellent, very good, or good health. *SRHS* is a widely used measure of health status, shown to have high reliability and validity, and to be highly predictive of mortality (Antecol and Bedard 2006; Ferraro and Farmer 1999; Idler and Angel 1990; Jasso et al. 2004; Read et al. 2005). According with the Organization for Economic Co-operation and Development (OECD), most of its member countries conduct regular health surveys collecting data on self-perceived health status; across these countries "about 69% of the adult population say their health is 'good' or 'very good'" while in the United States "90% of adults report being in good health" (OECD 2014; see also Idler and Benyamini 1997).

In addition to SRHS, which may vary across cultural and socioeconomic groups (Dowd

and Zajacova 2007), we investigate *chronic conditions*, for which there is relatively little research specifically on refugees (Venters and Gany 2009). We use a dichotomous variable, coded 1 if one from self-report if one has ever been diagnosed with one or more of six serious, but common and dangerous, medical conditions: (i) high blood pressure/hypertension; (ii) heart problems (heart disease or other cardiac condition); (iii) stroke; (iv) lung disease (bronchitis or emphysema); (v) diabetes (high blood sugar or borderline diabetes); or (vi) cancer. With these six questions in mind, we generated a dichotomous variable coded 1 if the individual reported any (at least one) of these conditions, and 0 if not. These six conditions are among the most common, dangerous, and chronic medical conditions reported in NIS and other health surveys.

The third outcome we look at is functional limitation, which tell us whether respondents reported having difficulty carrying out normal daily activities or specific tasks (such as household chores or work) due to a health problems. The literature points out that one or more functional limitations is a measure associated with non-severe disability (Brault 2012). NIS respondents were asked about "how much does X condition limit your normal daily activities" – specifically in the cases of (i) high blood pressure, (ii) diabetes, (iii) cancer, (iv) lung disease—or if "X condition limit your usual activities, such as household chores or work?" –for (v) a lung condition, (vi) heart problem, or (vii) angina. In addition, individuals answered two 'yes or no' questions: (viii) "Does the pain make it difficult for you to do your usual activities such as household chores or work?" and (ix) "Do you have any physical or nervous condition that limits the type of work or the amount of work you can do?" If any of these nine limitations was reported, we coded 1, and 0 if not.

Independent Variables

Our chief interest is in the relationship between refugee status and the three health outcomes described above. In the selection and recoding of our independent variables, we make an analytical distinction between four central variables and around a dozen control variables. Refugee status along with place of birth (geographic region: African-born [reference category], Latin American-born or other), country of birth (specific), and years of U.S. experience (see Massey and Redstone 2004) correspond to the first group, whereas age, educational attainment, gender, marital status, family size, employment, race, ethnicity, language, health insurance coverage, and tobacco consumption (ever) correspond to the second group of covariates. In

addition to our interest in the refugee or visa status, we put careful attention on *nativity & ethno-racial* characteristics, such as white or black (=1) race or Hispanic/Latino/a ethnicity (=1), because we believe that there are important relationships between the specific countries or geo-cultural regions/places of origin and health outcomes, or between these outcomes and ethno-racial backgrounds.

Another way to group these variable is by analyzing *selectivity, acculturation,* and *health care access & behavior.* In other words, we can talk about selection variables such as year of *age* (continuous), *gender/biological sex* (female=0, male=1), *marital status* (unmarried=0, currently married=1), education (high school/GED, some college, bachelor's degree or more, and with 'less than high school' as the reference category), *employment* (employed, not in the labor force or other=0, and unemployed=1), and *poverty status* (pending recode). All these variable have been identified in the migration literature as important and reasonable proxies to the *selectivity* phenomenon. Regarding the measurement of acculturation we include two variables: *years of U.S. experience* (0 to 1 is the reference category, followed by 2 to 5 years, 6 to 10 years, 11 to 15 years, and 16 years or more) and *English language ability* (captured by the language of interview employed: English=0, non-English=1). To measure health care access and health behavior in the NIS, we choose two variables that correspond to each dimension: *health insurance coverage* (0=has public or private insurance, 1=lacks any type of insurance) and *smoking* (0=for those who have never smoked tobacco, 1=for those who have ever smoked cigarettes [currently of formerly].

Analysis

We ran descriptive statistics (means and standard deviations or percentages) for all variables included in the analysis and we also ran bivariate crosstabulations of the three dependent variables (health outcomes) by the independent variables. Finally, we ran binomial logistic regression models for each of the three dependent variables, adding in variables in groups according to the theoretical framework described above. All analyses were run using Stata statistical analysis software in a secure data enclave. Please note that in the results shown here, we have excluded all the observations with missing values using listwise deletion, but in following weeks, we will use multiple imputation for missing values in the next set of analyses. We also will run the descriptive statistics and regression models using the svy commands in

Stata to properly weight for the sampling strategy, but these preliminary results are shown unweighted.

For each of the three health outcomes we run binary logistic regression models. We begin by looking only at the influence of refugee status (Model 1). Then we include categorical variables for nativity, race and ethnicity (Model 2). In the case of nativity as a categorical variable, African-born is the reference or omitted category, and Latin American-born and those born in other countries are the comparison groups. Our next step is the addition of selection characteristics or selectivity factors, including age, marital status, education and employment (Model 3). After this we consider acculturation measures such as years in the U.S. and English ability (Model 4). Finally, we add health insurance (Model 5) and smoking experience (Model 6). With this strategy of building towards a complete model, we are able to capture the relevance of refugee status and the decrease of nativity and ethno-racial effects in a gradual manner.

In the next set of analyses for this paper, we would like to test interaction effects between refugee status and nativity, refugee status and years in the U.S. and English language ability, and between refugee status and health insurance, as we expect that these variables may operate in a different manner for refugees than they do for non-refugees. Moreover, we would like to incorporate some additional background (prior to migration) characteristics and we hope to incorporate the next wave of data which have just been released to look at change in health status over time among the same immigrants and refugees.

Results

Descriptive Results

Table 1 shows socio-demographic characteristics for the sample. We show characteristics for refugees and non-refugee U.S. immigrants, with bivariate test of significance (t-test) comparing these two groups. With the exceptions of sex and marital status, we notice in Table 1 that refugees are significantly different from non-refugees on the majority of characteristics. There is a slightly higher percentage of males among the refugees (51.3 percent) compared to the non-refugee immigrants (48.3 percent), and the non-refugees seem to be younger (39 years old) than the refugees (41 years old). It is important to mention that in both groups over 65 percent of the respondents are under 45 years of age, and therefore they are in the prime working ages.

Over 70 percent of the immigrants in each group are currently married, with an average family size of 3.5 for refugees and 3.7 for non-refugees.

The percentages of refugees and non-refugees whose highest level of educational attainment is less than a high school diploma are very similar. However, almost one in four refugees completed high school (or GED) compared to almost one in seven for the non-refugees. Half of the non-refugees have some college or more (BA, MA or a higher degree), and in the case of the refugees, the percentage with this level of education is somewhat lower (45.6 percent). A higher share of refugees are employed (74 percent) compared to non-refugees (58 percent).

Sixty percent of the refugees are white, 22 percent black, and almost 18 percent of another race. On the other hand, the non-refugee immigrants are only 45 white, 13 percent black, and a comparatively higher proportion of respondents identified as another race (42 percent). In both groups a majority of respondents are not Hispanic or Latino/a(s), although this percentage is higher for the refugees (78.5 percent).

Perhaps due to the design of the NIS, looking at recent legal permanent residents in a specific cohort, we observe a very high percentage of non-refugee immigrants with no more than a year of experience (living) in the United States (47 percent) compared to the group of refugees (7 percent). The highest share of refugees under this variable have between 2 to 5 years living in U.S. territory (44 percent), followed by 6 to 10 years (31 percent). It is also interesting to note that almost one in ten among the non-refugees have 16 or more years living in the U.S. Regarding language, refugees also differ from non-immigrant refugees in the percentage of respondents whose interview was English, being slightly above 80 percent for the refugees and 73 percent for the non-refugee immigrants.

Table 2 indicates a number of health outcomes and health-related covariates by refugee status. With the exception of the six specific conditions ever diagnosed and the smoking practice, the differences between refugees and non-refugees are statistically significant. Non-refugee immigrants report a higher percentage of individual self-reporting very good and excellent health. Furthermore, the percentage of refugees who have "poor or fair" self-reported health (17 percent) is about two times higher than the non-refugee group (8 percent), indicating a health advantage for this latter group. In addition, despite the fact that a larger share of the refugees reported having health insurance (52 percent), these individuals show significantly higher

percentages of having a common but dangerous health condition or a functional limitation compared to non-refugees.

Regression Results

<u>*Self-Reported Health Status*</u>: In the first set of models, where the dependent variable is self-reported health status (SRHS) (see Table 3), our hypothesis about the refugee health disadvantage is confirmed. Mode1 1 simply compares refugees and non-refugees. The refugees are more than two times more likely to report poor or fair health compared to non-refugee immigrants. This result holds for all six variations of the model, even as many other independent variables are added in; in fact, if anything, the odds of refugees reporting poor or fair health are higher once control variables are added (OR=2.199 in Model 1 vs. OR=2.603 in Model 6).

In Model 2, when we add in nativity, race, and ethnicity, we see that Latin American and other immigrants are more likely than African immigrants to report poor or fair health and that Hispanic immigrants are also significantly more likely to report poor/fair health than non-Hispanic immigrants. Race has no significant effects in any of the models. In Model 3, when selection factors are added, however, the strength and significance of these effects dissipate. Nativity effects become insignificant and the effect of Hispanic status becomes only marginally significant. Meanwhile, the importance of age, sex, and education in predicting SRHS are clear in these results. For each one year increase in age, an immigrant is 5 percent more likely to report fair/poor health. Men are significantly less likely to report fair/poor health compared to women. Education has strong and significant effects; more educated immigrants are less likely to report fair/poor health compared to those with less than a high school diploma. Marital status has no significant effect on SRHS (this is true across all variations of the model). Finally, being unemployed has a negative effect on reporting fair/poor health, which is counterintuitive, but this result is only marginally significant and drops out of the next versions of the model.

In Model 4, we add acculturation factors and find support for the negative acculturation hypothesis; those who have the most years of U.S. exposure have significantly higher odds of reporting poor/fair health. Surprisingly, there is no effect for English ability (in any of the last three versions of the model). In Models 5 and 6, we add health insurance and smoking (health behavior), respectively, but we find no significant effects for these variables either. Nevertheless, the other significant variables remain so in these final models and the refugee health

disadvantage remains. It is not explained away by the addition of other independent variables.

Any Chronic Medical Condition: In the second set of models, shown in Table 4, the dependent variable is self-reporting that one was diagnosed with any chronic medical condition. Although the effects are not as strong as for poor/fair health, again our hypothesis about the refugee health disadvantage is confirmed. Mode1 1 compares refugees and non-refugees and finds that refugees are 1.84 times more likely to have a chronic condition compared to non-refugee immigrants. This result again holds for all six variations of the model, as other independent variables are added in; in fact, the odds of refugees having a chronic condition are slightly higher once control variables are added (OR=1.840 in Model 1 vs. OR=1.920 in Model 6).

We add in nativity, race, and ethnicity in Model 2 and find that Latin American and other immigrants are significantly more likely than African immigrants to have a chronic condition. Hispanic ethnicity and race have no significant effects in any of these models. In Model 3, when selection factors are added, however, nativity effects become insignificant. In this model only age and marital status affect the probability of having a chronic condition. The effect of age is strong and significant; for each one year increase in age, an immigrant is 7.5 percent more likely to have a chronic condition (p<.001). Married immigrants are marginally significantly more likely to have a chronic condition compared to non-married immigrants, but this effect loses all significance after health insurance is added in Model 5. Education, sex, and employment status have no significant effect on having chronic conditions.

In Model 4, we add acculturation factors and find no significant effects at all for these variables and thus no support for the negative acculturation hypothesis for chronic conditions. Only the refugee and age effects remain strongly significant. In Model 5, we add health insurance and find that the uninsured are significantly less likely to have been diagnosed with a chronic condition; this may be because those with insurance visit a doctor more frequently and have the opportunity to be diagnosed. Finally, when smoking is added in (Model 6), we find that smokers are 1.3 times more likely than non-smokers to have been diagnosed with a chronic condition (p<.001). Smoking is highly predictive of many of the chronic conditions in this measure. The refugee health disadvantage again remains strong and significant in this final model and is not explained away by the addition of other independent variables.

Functional Activity Limitation: Table 5 shows results from the third and final set of models, in which the dependent variable is self-reporting any functional limitation. Here we again find effects similar to those found in Table 3 for poor/fair health. Yet again our hypothesis about the refugee health disadvantage is confirmed. Mode1 1 compares refugees and non-refugees and finds that refugees are 2.715 times more likely to have a functional limitation compared to non-refugee immigrants. This result again holds for all six variations of the model, as other independent variables are added in (OR=2.715 in Model 1 vs. OR=2.548 in Model 6). Note that, as shown in the appendix table Table 1-A, refugees are much more likely to report pain or physical disability compared to non-refugees, and they also are about twice as likely to report high blood pressure as a limitation to activity.

Model 2 adds nativity, race, and ethnicity as independent variables; we again find that Latin American and other immigrants are significantly more likely than African immigrants to have a functional limitation (OR=2.391, p<.001 for Latin American-born and OR=1.550, p<.05 for those both in other regions). Hispanic ethnicity and race have no significant effects in any of these models predicting functional limitation. After selection factors are added in Model 3, however, nativity effects again become insignificant.

In Model 3, the effect of age is again strong and significant; for each one year increase in age, an immigrant is 5.3 percent more likely to have a functional limitation (p<.001). Men and married immigrants are significantly less likely to have a functional limitation compared to women and non-married immigrants, respectively. Education decreases the odds of having a functional limitation, as does unemployment (which is a strange result). All of these effects hold in the next three versions of the model, with the exception of unemployment. It loses significance once health insurance is added in, likely because of the link between employment and having health insurance.

We add acculturation factors in Model 4 and find that there is a positive relationship between years of exposure in the U.S. and functional limitation, although this is not significant for those immigrants who have 2-5 years in the U.S. There is no significant effect of English ability. Thus, in the models for functional limitation, we find some support for the negative acculturation hypothesis. In Model 5, we add health insurance and find that the uninsured are significantly less likely to have a functional limitation. Again, this may be because those with insurance visit a doctor more frequently and have the opportunity to be diagnosed. Finally, when

smoking is added in Model 6, we find that smokers are 1.432 times more likely than non-smokers to have a functional limitation (p<.001). Smoking is correlated with poor health overall and functional limitations too. As in all of our models, the refugee health disadvantage still remains strong and significant in this final model (OR=2.548; p<.001) despite the presence of other independent variables.

Conclusions and Discussion

In conclusion, we find much evidence to support the hypothesis of a refugee health disadvantage both in bivariate and regression model results. The health disadvantage for refugees was evident across all three health outcome measures, although the odds ratios were higher for SRHS and functional limitation than for chronic diseases. The negative effect of being a refugee on health in the models was not reduced by the addition of any of the numerous other independent variables, including measures of nativity, race, and ethnicity; selection; acculturation; insurance coverage; or health behaviors. This suggests that refugees' health disadvantage may stem from trauma and exposure to violence, disease, and stress during war and flight from war, but we intend to do much more detailed analysis to see if it is possible to determine what the main factors are that cause refugees to be so disadvantaged in terms of these health outcomes.

These data suggest that current refugee medical screening guidelines may be inadequate for the refugee population of today. According to our analysis, refugees are worse off than other immigrants in terms of chronic conditions and functional limitations, as well as overall health status. Current refugee screening, which focuses primarily on nutritional disorders and infectious diseases, may not capture many of their health issues and needs. Of course there is likely a lot of heterogeneity in how screening guidelines are implemented at the community and individual level and by specific health care providers. Nevertheless, national screening guidelines should be updated to make at least some tests for chronic conditions mandatory for all refugees, not suggested for some age and sex groups as they are currently. In a qualitative pilot research study with the Liberian refugee community in Staten Island, NY, the first author of this paper and a colleague found that outreach and availability of services for chronic health conditions was limited and lacking, especially for older adults (Ludwig and Reed, 2014). Community health and

social workers and nonprofits providing health services to refugee communities, as well as health care providers, should keep these issues in mind as they are designing programs and outreach campaigns.

Our research is subject to limitations, primarily that our data are cross-sectional and do not follow immigrants over time, although we do have some retrospective information. Nevertheless, there is a possibility that in testing for duration of residence, we measure not how duration affects health, but changing health selectivity of refugees and migrants in different years of arrival. By controlling for visa status and sub-region/country of origin, we can at least partially ameliorate this issue. Another potential issue is that as immigrants acculturate to U.S. norms, they may be more likely to report health problems; over time, immigrants' health may appear to worsen, but in fact, they simply report poor health more frequently as they assimilate. For this reason, we use multiple health outcomes which include measures of actual medical diagnoses.

The NIS dataset is comprised of new legal permanent residents (LPRs) of the U.S. only. However, it includes no data on undocumented immigrants, although some of the LPRs in the sample could have been initially "illegal" (i.e., visa over-stayers) (Jasso 2003). Therefore, this analysis focuses on *legal* immigrants. Finally, we focus only on the first generation and only on adult health, but future analyses may also examine the second generation, i.e., children of African immigrants.

Very little is known about the long-term effects of displacement and war on refugees' health status (Clarkin 2008). It would be best if we could follow refugees longitudinally throughout their life course to observe their health at various times, but there are no surveys that are well-designed for this purpose. Nevertheless, in our next round of analysis, we can examine the second wave of the NIS. However, sample attrition is a major limitation for surveys of migrants and the response rate for the second wave was only 46.1 percent (http://nis.princeton.edu/index.html).

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Table 1. Socio Demographic Characteristics of Refugee and Non-refugee Immigrants
Adults (age 18+), descriptive characteristics (un-weighted)
Source: New Immigrant Survey (NIS-1-2003)

Characteristics	Refugee	Non-refugee	Sig.[a]
	Mean or %	Mean or %	
Sex			
Male	51.28	48.34	
Female	48.72	51.66	
Age (mean and std. error)	40.59 (0.51)	38.96 (0.15)	**
Age Group			**
18-24	6.93	10.24	
25-34	26.82	35.57	
35-44	33.03	26.48	
45-54	20.62	13.90	
55-64	7.85	7.47	
65-95	4.74	6.34	
Marital Status			
Not currently married	28.65	29.38	
Married	71.35	70.62	
Family size (mean and std. error)	3.46 (0.08)	3.67 (0.02)	*
Education (highest level attained)			**
Less than HS	31.20	32.21	
HS grad or GED	23.18	14.89	
Some College (including AD)	14.60	12.26	
BA, MA or more	31.02	40.64	
Employment			***
Employed (working now)	74.09	58.02	
Unemployed	7.85	17.39	
Not in the labor force	14.78	17.88	
Unknown (don't know, refusal, other)	3.28	6.71	
Race			***
White	60.40	45.25	
Black/African American	21.72	12.47	
Other	17.88	42.28	
Hispanic Ethnicity			***
Not Hispanic	78.47	67.47	
Hispanic	21.53	32.53	

Years in the United States			***
0 to 1	7.30	47.45	
2 to 5	43.98	15.72	
6 to 10	30.66	16.24	
11 to 15	14.96	11.63	
16 or more	3.10	8.96	
Language of interview (CAPI at start)			***
English	81.20	73.31	
Spanish	18.80	26.69	
N =	548	7,635	

+p<0.10, *p<0.05, **p<0.01, ***p<0.001
[a] Bivariate significance test indicating whether Refugees differ significantly from non-Refugee immigrants

Table 2. Health Outcomes among U.S. Refugee and Non-Refugee Immigrants
Adults (age 18+), descriptive characteristics (un-weighted)
Source: New Immigrant Survey (NIS-1-2003)

Characteristics	Refugee	Non-refugee	Sig.[a]
	Mean or %	Mean or %	
Self Reported Health Status (SRHS)			***
Poor	5.29	1.02	
Fair	11.31	7.28	
Good	29.38	26.10	
Very Good	24.64	28.92	
Excellent	29.38	36.67	
Poor Health (poor or fair SRHS)	16.61	8.30	***
Condition (ever diagnosed)			
High Blood Pressure/Hypertension	13.69	9.13	
Hearth Problems	4.01	1.44	
Stroke	0.73	0.38	+
Chronic Lung Disease (Bronchitis or Emphysema	1.46	0.68	
Diabetes or high blood sugar	5.47	3.75	
Cancer	1.09	0.51	
Any Condition (of the six previous conditions)	21.53	12.98	***
Total Number of Conditions (mean and std. error)	0.26 (0.02)	0.16 (0.01)	***
Any Functional Limitation [b]	21.35	9.09	***
Health Insurance Coverage (public or private)			***
Covered	52.55	38.04	
Not covered	47.45	61.96	
Health Behavior			
Smoke Cigarettes (currently or formerly)	26.28	24.05	
N =	548	7,635	

+p<0.10, *p<0.05, **p<0.01, ***p<0.001
[a] Bivariate significance test indicating whether Refugees differ significantly from non-Refugee immigrants
[b] In the Appendix, Table 1-A details some of these functional limitations for the two groups

Table 3 Determinants of Self-Reported Health, logistic regression (1=Poor/Fair Health)
New Immigrant Survey, 2003

Independent variables	Model 1 Refugee status			Model 2 Nativity, race, ethnicity			Model 3 + Selection factors (no poverty)			Model 4 + Acculturation			Model 5 + Health insurance			Model 6 + Health behaviors		
	Odds Ratio	Lin. Std. Err.	Sig.	Odds Ratio	Lin. Std. Err.	Sig.	Odds Ratio	Lin. Std. Err.	Sig.	Odds Ratio	Lin. Std. Err.	Sig.	Odds Ratio	Lin. Std. Err.	Sig.	Odds Ratio	Lin. Std. Err.	Sig.
Status																		
Refugee	2.199	0.268	***	2.698	0.343	***	2.823	0.382	***	2.601	0.374	***	2.600	0.375	***	2.603	0.375	***
Nativity																		
African (ref.)				1.000		--	1.000			1.000		--	1.000		--	1.000		--
Latin American				2.851	0.644	***	1.341	0.324		1.154	0.286		1.154	0.286		1.146	0.284	
Other				1.632	0.392	*	1.245	0.321		1.344	0.362		1.344	0.362		1.332	0.359	
Race																		
Black (ref.)				1.000		--	1.000			1.000		--	1.000		--	1.000		--
White				0.992	0.205		0.958	0.214		0.820	0.195		0.820	0.195		0.805	0.191	
Other				1.260	0.266		1.057	0.241		0.934	0.224		0.934	0.224		0.925	0.221	
Ethnicity																		
Hispanic				1.498	0.291	*	1.704	0.357	+	1.367	0.321		1.366	0.321		1.354	0.318	
Age							1.049	0.003	***	1.051	0.003	***	1.051	0.003	***	1.051	0.003	***
Sex																		
Male							0.725	0.063	***	0.711	0.062	***	0.711	0.062	***	0.683	0.063	***
Marital status																		
Married							1.050	0.099		1.031	0.098		1.030	0.098		1.029	0.098	
Education																		
Less than HS (ref.)							1.000		--	1.000		--	1.000		--	1.000		--
HS grad/GED							0.536	0.070	***	0.549	0.072	***	0.549	0.072	***	0.547	0.072	***
Some college							0.429	0.068	***	0.424	0.068	***	0.423	0.068	***	0.422	0.068	***
BA or more							0.305	0.036	***	0.301	0.037	***	0.301	0.037	***	0.300	0.037	***
Employment																		
Unemployed							0.771	0.097	+	0.862	0.111		0.863	0.111		0.859	0.111	
Years in the U.S.																		
0-1 (ref.)										1.000		--	1.000		--	1.000		--
2-5										1.295	0.169	*	1.293	0.171	+	1.290	0.170	+
6-10										1.300	0.184	+	1.298	0.186	+	1.297	0.186	+
11-15										1.780	0.241	***	1.778	0.244	***	1.780	0.244	***
16+										2.052	0.282	***	2.050	0.286	***	2.045	0.285	***
English ability																		
Non-English interview										1.330	0.255		1.330	0.255		1.339	0.257	
Health insurance																		
Uninsured													0.995	0.094		1.001	0.095	
Health behaivors																		
Smoke Cigarettes (currently or formely)																1.165	0.119	
Log likelihood	-2430.9635			-2354.3807			-2057.4585			-2039.7631			-2039.7618			-2038.6545		
LR chi2	(1) 36.14			(6) 189.30			(13) 783.14			(18) 818.54			(19) 818.54			(20) 820.75		
Prob > chi2	0.0000			0.0000			0.0000			0.0000			0.0000			0.0000		
Pseudo R2	0.0074			0.0386			0.1599			0.1671			0.1671			0.1676		
N	8183			8183			8183			8183			8183			8183		

+p<0.10, *p<0.05, **p<0.01, ***p<0.001

Table 4 Determinants of Any Chronic Medical Condition, logistic regression (1=Diagnosed)
New Immigrant Survey, 2003

Independent variables	Model 1 Refugee status			Model 2 Nativity, race, ethnicity			Model 3 + Selection factors (no poverty)			Model 4 + Acculturation			Model 5 + Health insurance			Model 6 + Health behaviors		
	Odds Ratio	Lin. Std. Err.	Sig.	Odds Ratio	Lin. Std. Err.	Sig.	Odds Ratio	Lin. Std. Err.	Sig.	Odds Ratio	Lin. Std. Err.	Sig.	Odds Ratio	Lin. Std. Err.	Sig.	Odds Ratio	Lin. Std. Err.	Sig.
Status																		
Refugee	1.840	0.201	***	1.996	0.224	***	1.970	0.239	***	1.938	0.246	***	1.910	0.243	***	1.920	0.244	***
Nativity																		
African (ref.)				1.000		--	1.000		--	1.000		--	1.000		--	1.000		--
Latin American				2.098	0.352	***	1.206	0.223		1.159	0.218		1.151	0.217		1.135	0.214	
Other				1.474	0.259	*	1.042	0.200		1.056	0.207		1.042	0.203		1.022	0.200	
Race																		
Black (ref.)				1.000		--	1.000		--	1.000		--	1.000		--	1.000		--
White				1.055	0.174		1.011	0.183		0.986	0.185		0.982	0.183		0.943	0.176	
Other				1.221	0.206		1.024	0.190		0.998	0.190		0.994	0.189		0.982	0.187	
Ethnicity																		
Hispanic				0.880	0.141		1.067	0.187		1.004	0.198		1.000	0.197		0.984	0.194	
Age							1.075	0.003	***	1.075	0.003	***	1.076	0.003	***	1.076	0.003	***
Sex																		
Male							0.929	0.067		0.922	0.067		0.927	0.067		0.863	0.065	+
Marital status																		
Married							1.158	0.096	+	1.155	0.096	+	1.138	0.095		1.134	0.095	
Education																		
Less than HS (ref.)							1.000		--	1.000		--	1.000		--	1.000		--
HS grad/GED							1.048	0.119		1.053	0.120		1.044	0.119		1.037	0.119	
Some college							1.004	0.126		1.004	0.127		0.993	0.126		0.987	0.125	
BA or more							0.997	0.092		0.994	0.094		0.958	0.126		0.958	0.091	
Employment																		
Unemployed							0.968	0.094		0.993	0.099		1.029	0.104		1.022	0.103	
Years in the U.S.																		
0-1 (ref.)										1.000		--	1.000		--	1.000		--
2-5										0.986	0.105		0.930	0.100		0.932	0.101	
6-10										1.098	0.121		1.020	0.115		1.023	0.116	
11-15										1.186	0.143		1.107	0.135		1.108	0.136	
16+										1.128	0.147		1.047	0.138		1.046	0.138	
English ability																		
Non-English interview										1.088	0.184		1.123	0.190		1.136	0.192	
Health insurance																		
Uninsured													0.768	0.061	***	0.779	0.063	**
Health behaivors																		
Smoke Cigarettes (currently or formerly)																1.334	0.111	***
Log likelihood	-3232.5851			-3214.0134			-2734.8689			-2733.2116			-2727.7773			-2721.8737		
LR chi2	(1) 28.14			(6) 65.28			(13) 1023.57			(18) 1026.88			(19) 1037.75			(20) 1049.56		
Prob > chi2	0.0000			0.0000			0.0000			0.0000			0.0000			0.0000		
Pseudo R2	0.0043			0.0101			0.1576			0.1581			0.1598			0.1616		
N	8183			8183			8183			8183			8183			8183		

+p<0.10, *p<0.05, **p<0.01,
***p<0.001

Table 5 Determinants of Functional Activity Limitation, logistic regression (1=Reports any functional limitation)
New Immigrant Survey, 2003

	Model 1			Model 2			Model 3			Model 4			Model 5			Model 6		
	Refugee status			Nativity, race, ethnicity			+ Selection factors (no poverty)			+ Acculturation			+ Health insurance			+ Health behaviors		
Independent variables	Odds Ratio	Lin. Std. Err.	Sig.	Odds Ratio	Lin. Std. Err.	Sig.	Odds Ratio	Lin. Std. Err.	Sig.	Odds Ratio	Lin. Std. Err.	Sig.	Odds Ratio	Lin. Std. Err.	Sig.	Odds Ratio	Lin. Std. Err.	Sig.
Status																		
Refugee	2.715	0.303	***	2.969	0.342	***	2.907	0.354	***	2.574	0.333	***	2.534	0.329	***	2.548	0.331	***
Nativity																		
African (ref.)				1.000			1.000			1.000			1.000			1.000		
Latin American				2.391	0.460	***	1.319	0.271	--	1.252	0.261	--	1.248	0.260	--	1.226	0.256	--
Other				1.550	0.320	*	1.209	0.265		1.145	0.256		1.133	0.253		1.106	0.247	
Race																		
Black (ref.)				1.000			1.000			1.000			1.000			1.000		
White				1.008	0.191		1.024	0.206	--	1.020	0.213	--	1.020	0.213	--	0.967	0.202	--
Other				1.167	0.227		1.040	0.215		1.056	0.224		1.054	0.223		1.035	0.219	
Ethnicity																		
Hispanic				0.874	0.160		0.961	0.186		0.993	0.213		0.988	0.212		0.969	0.208	
Age							1.053	0.003	***	1.054	0.003	***	1.055	0.003	***	1.055	0.003	***
Sex																		
Male							0.724	0.059	***	0.725	0.059	***	0.728	0.059	***	0.665	0.057	***
Marital status																		
Married							0.832	0.072	*	0.824	0.072	*	0.813	0.071	*	0.808	0.071	*
Education																		
Less than HS (ref.)							1.000			1.000			1.000			1.000		
HS grad/GED							0.889	0.106	--	0.869	0.104		0.862	0.104		0.854	0.103	
Some college							0.792	0.107	+	0.759	0.104	*	0.750	0.103	*	0.744	0.102	*
BA or more							0.552	0.058	***	0.521	0.056	***	0.504	0.055	***	0.503	0.055	***
Employment																		
Unemployed							0.745	0.087	*	0.807	0.097	+	0.829	0.100		0.822	0.099	
Years in the U.S.																		
0-1 (ref.)										1.000		--	1.000		--	1.000		--
2-5										1.447	0.167	***	1.384	0.162	**	1.380	0.161	**
6-10										1.214	0.155		1.146	0.149		1.146	0.149	
11-15										1.445	0.192	**	1.370	0.185	*	1.371	0.185	*
16+										1.471	0.209	**	1.388	0.201	*	1.378	0.199	*
English ability																		
Non-English interview										0.860	0.154		0.880	0.158		0.894	0.160	
Health insurance																		
Uninsured													0.807	0.071	*	0.819	0.072	*
Health behaivors																		
Smoke Cigarettes (currently or formely)																1.432	0.133	***
Log likelihood	-2609.8592			-2591.2503			-2314.973			-2306.7142			-2303.7746			-2296.5202		
LR chi2	(1) 68.44			(6) 105.66			(13) 658.21			(18) 674.73			(19) 680.61			(20) 695.12		
Prob > chi2	0.0000			0.0000			0.0000			0.0000			0.0000			0.0000		
Pseudo R2	0.0129			0.0200			0.1245			0.1276			0.1287			0.1314		
N	8183			8183			8183			8183			8183			8183		

+p<0.10, *p<0.05, **p<0.01,
***p<0.001

Table 1-A. DETAILS ON FUNCTIONAL LIMITATIONS

New Immigrant Survey 1, 2003

		Refugee	Non-refugee	Sig.[a]
Any Functional Limitation		21.35	9.09	***
Conditions that limit normal activities or work:				
High blood pressure		7.30	3.47	***
Diabetes limits normal activities		3.28	1.58	**
Cancer limits normal activities		0.55	0.22	
Chronic lung disease.		0.55	0.35	
Lung condition		0.18	0.13	
Heart problem		2.37	0.76	***
Angina		1.09	0.21	***
Pain		13.50	3.50	***
Physical or nervous condition		8.58	2.63	***
	N =	548	7,635	

+$p<0.10$, *$p<0.05$, **$p<0.01$, ***$p<0.001$

[a] Bivariate significance test indicating whether Refugees differ significantly from non-Refugee immigrants