An Examination of Health Selection among U.S. Immigrants using Multi-National Data

Annie Ro PhD, Nancy L. Fleischer PhD, Bridgette Blebu MPH

The "healthy immigrant effect" posits that immigrants are positively selected on health because healthier individuals are more mobile and will benefit the most economically from migration. Despite being widely accepted, our knowledge of the extent of health selection and its role in post-migration health is extremely limited. We are first and foremost limited by inaccurate assessments of health selection. Health selection is traditionally assessed by comparing the health status of the foreign born to the health status of the US born. A more precise examination, however, requires information about non-migrants who stayed behind in the country of origin. Health selection is present if migrants to the US have better health status than their non-migrating counterparts.

Further, we do not know how health selection varies across country-of-origin characteristics. Jasso et al. (2004) proposed that features of the sending countries that impact the net economic gain of migration, such as distance, skill transferability, and skill prices, should also be associated with health selection. Read et al. (2005) similarly proposed that health selection may increase as distance increases and country-level income decreases because the costs of migration are higher. This suggests that the extent of health selection varies across different immigrant groups and is subject to contextual factors in the country of origin. However, there has been little empirical evidence supporting these theories.

This project combined international data and US data on immigrants to explore these research gaps. We assessed the level of health selection for immigrants from 16 sending countries with among the largest migrant populations to the US. The first aim of the project was to determine the extent of health selection among migrants to the US by comparing their health status to non-migrants in their countries of origin. The second aim was to identify country-level correlates of health selection. The third aim of the paper was to determine whether health selection accounts for the commonly-observed differences in health between immigrants and the US-born in analyses of US data. This abstract will present the preliminary results for the first two aims and discuss our analysis plan for the third aim.

The countries included in this analysis and their respective data sources are provided in Table 1. All data sources are population-based and nationally-representative. We accounted for the complex survey designs in all of our analyses.

We used self-rated health as our measure of health. This was the most appropriate measure due to question availability and measurement concordance across the multiple data sources. Because coding was not identical across all surveys, we dichotomized self-rated health into the best level of health versus all others. We assessed health selection using Duncan and Duncan's Index of Dissimilarity (1955), which we calculated as the absolute difference in proportions of excellent self-rated between migrants and non-migrants, divided by two. For each country, we age-standardized the proportions of self-rated health of non-migrants to the immigrant age distribution. All analyses were also gender stratified.

The Index of Dissimilarity for the countries in our analysis is provided in Table 2. In all countries, the proportion of migrants reporting excellent health was higher than the proportion of their non-migrating counterparts in their countries of origin. The country with the highest degree of dissimilarity between migrants and non-migrants was Brazil. Fifteen percent of men and 19% of women would have to change their self-reported health status in order for Brazilian non-migrants to have similar proportions of excellent health as Brazilian immigrants to the US. The country with the smallest degree of dissimilarity was Puerto Rico; the proportion of excellent health between non-migrants and migrants was nearly identical for both men and women. Some countries had noticeable gender differences. Chinese men had very low degree of dissimilarity while Chinese women had a higher degree.

We also examined the bivariate correlations between health selection and several country-level characteristics: geographic distance, cultural distance (as measured by Chiswick and Miller (2005) English language distance scale), GDP per capita, infant mortality rate, and urbanicity. Spearman correlation coefficients for these characteristics and the Index of Dissimilarity are presented in Table 3; Figures 1 and 2 display graphs of selected variables. Geographic distance was significantly correlated with health selection among women; the further the distance from the US, the higher degree of difference in excellent health between migrants and non-migrants. Geographic distance also had the largest correlation coefficient among men, followed by urbanicity.

We plan to build on this analysis in several ways. First, we are in the process of gathering data from three additional countries: Colombia, Japan and Russia. We also plan to examine additional correlates of health selection, such as average years of schooling in the sending country, percent of immigrants with employment-based visas and Gini coefficient for income inequality of the sending country. We will also calculate additional measures of difference to assess health selection, such as the Net Difference Index (NDI), which ranges from -1 to 1 and utilizes the entire range of self-rated health categories to compare the distribution of self-rated health of immigrants to non-migrants.

The final aim of this paper is to examine whether health selection can explain differences in self-rated health between migrants and the US-born. Immigrants display better health than the US-born across a range of health outcomes, including self-rated health (Acevedo-Garcia et al., 2010). Health selection is often believed to underlie immigrants' health advantage vis a vis the US-born; if healthier individuals are more likely to migrate, they will display better health than the US-born. As previously discussed, health selection is traditionally assessed by comparing the foreign-born to the US-born in a US-based dataset. In this aim, we will take an arguably better measure of health selection that is obtained with country-of-origin data to examine whether health selection can indeed explain the health differential between immigrants and the US-born.

We will use the Current Population Survey to compare the self-rated health of immigrants to the US-born, and then control for health selectivity at the individual-level. We will calculate an individual measure of health selectivity, following the procedure detailed by Ichou (2014) in his examination of educational selectivity. Briefly, we will create a percentile variable that represents an immigrant's location on the distribution of health of non-migrants from the immigrant's sending country, and will use this variable in regression models to control for health selectivity.

Table 1. Countries and Data Sources

Country	**Survey**
Brazil, China, Dominican Republic, Ecuador, Germany, Guatemala, India, Mexico, Pakistan, Philippines, Ukraine, Vietnam	2003 World Health Survey
Argentina	2005 National Survey of Risk Factors for Non-communicable Diseases
Canada	2003 Canada Community Health Survey
Puerto Rico	2003 Behavioral Risk Factor Surveillance System
South Korea	2003 Korea National Health and Nutrition Examination Survey
United Kingdom	2003 Healthy Survey for England
United States	2003-2007 Current Population Survey

Table 2. Index of Dissimilarity by Country

Country	Men	Women
Argentina	0.12	0.17
Brazil	0.15	0.19
Canada	0.10	0.10
China	0.00	0.07
Dominican Republic	0.04	0.04
Ecuador	0.04	0.07
Germany	0.03	0.06
Guatemala	0.04	0.05
India	0.05	0.08
Mexico	0.01	0.02
Korea	0.13	0.12
Pakistan	0.03	0.05
Philippines	0.12	0.12
Puerto Rico	0.01	0.00
Ukraine	0.10	0.12
United Kingdom	0.03	0.04
Vietnam	0.04	0.07

Table 3. Bivariate Correlations between Sending Country Characteristics and Health Selectivity (as measured by Duncan's Index of Dissimilarity)

Characteristic	Men	Women
Linguistic Distance	-0.19	-0.03
Geographic Distance	0.25	0.47^{+}
Urbanicity	0.24	0.12
GDP per capita	-0.10	-0.19
Infant Mortality	-0.09	-0.17

$^{+}$ $p<.10$

Figure 1. Scatterplot of Index of Dissimilarity and Geographic Distance to the US (miles)

Men Women

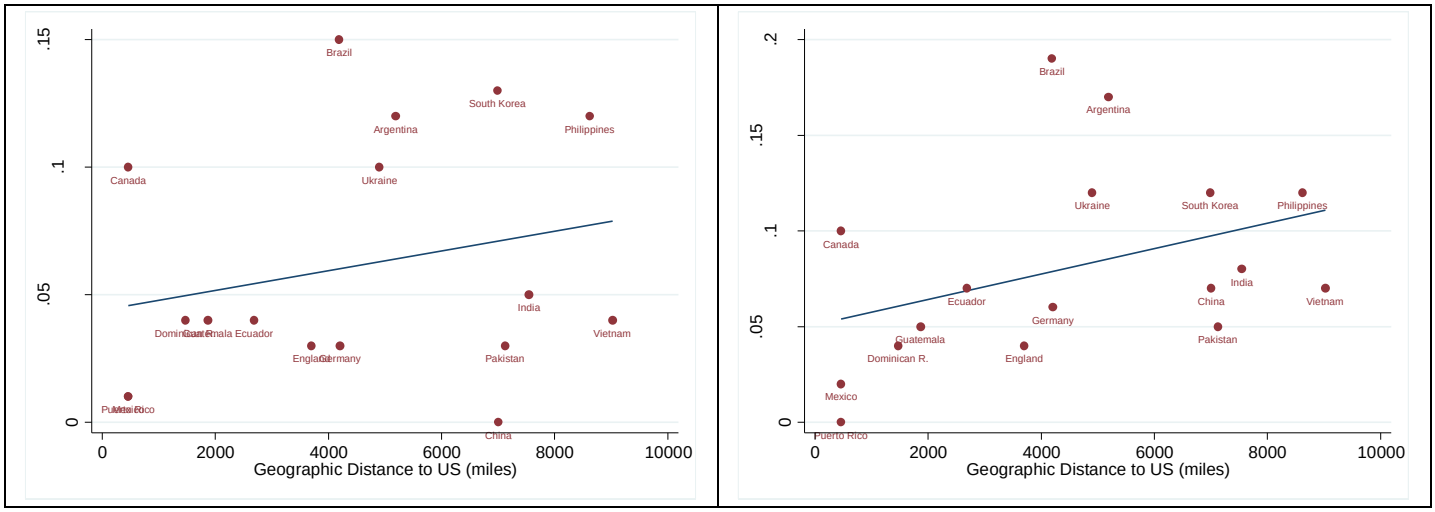
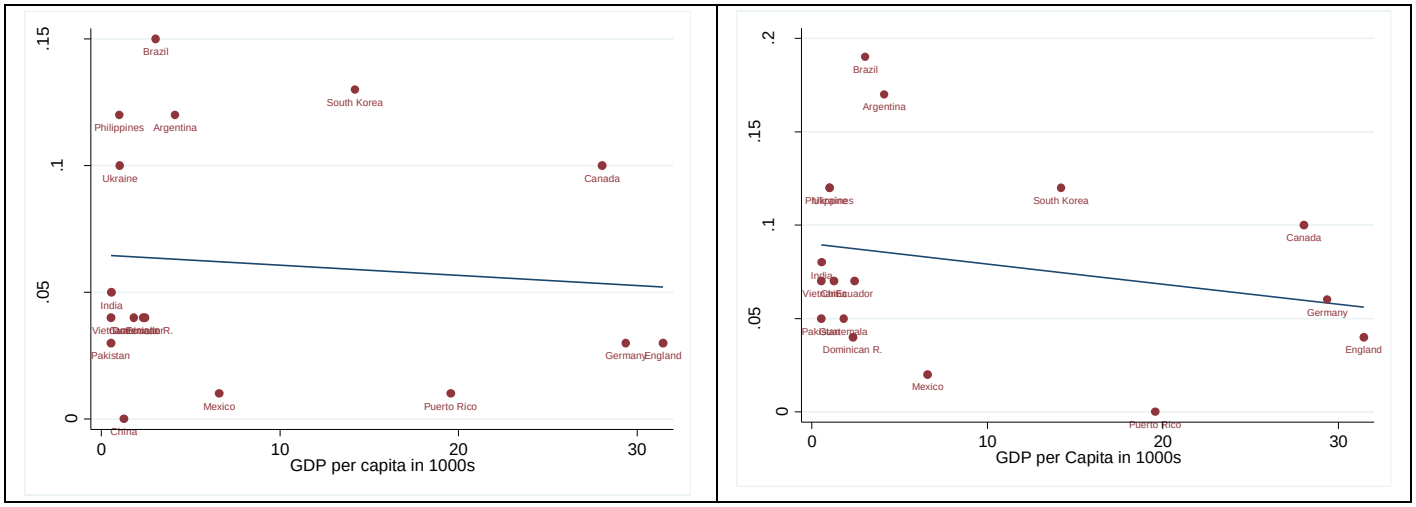


Figure 2. Scatterplot of Index of Dissimilarity and GDP per capita

Men Women



References

Acevedo-Garcia, D., Bates, L.M., Osypuk, T.L., & McArdle, N. (2010). The effect of immigrant generation and duration on self-rated health among US adults 2003–2007. *Social Science & Medicine,* 71, 1161-1172.

Chiswick, B.R., & Miller, P.W. (2005). Linguistic Distance: A Quantitative Measure of the Distance Between English and Other Languages. *Journal of Multilingual and Multicultural Development,* 26, 1-11.

Duncan, O.D., & Duncan, B. (1955). Residential Distribution and Occupational Stratification. *American Journal of Sociology,* 60, 493-503.

Ichou, M. (2014). Who They Were There: Immigrants' Educational Selectivity and Their Children's Educational Attainment. *European Sociological Review,* Advance Online Publication.

Jasso, G., Massey, D., Rosenzweig, M., & Smith, J. (2004). Immigrant Health: Selectivity and Acculturation. In N. Anderson, N. Bulatao, & B. Cohen (Eds.), *Critical Perspectives on Racial and Ethnic Differences in Health in Late Life* pp. 227-266). Washington, DC: The National Academies Press.

Read, J.n., Emerson, M., & Tarlov, A. (2005). Implications of Black Immigrant Health for U.S. Racial Disparities in Health. *Journal of Immigrant Health,* 7, 205-212.