Immigrant Health around the World: Evidence from the World Values Survey

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Abstract

We describe the relationship between immigrant status and self-rated health around the world, both in raw descriptive statistics and in models controlling for individual characteristics. Using the World Values Survey (1981–2005), we analyze data from 32 different countries worldwide. We estimate four regression models per country. The basic model tests mean differences in self-rated health. Additional models add demographic and social class controls. Introduction of control variables (most particularly, age) changes the results dramatically. In the final model, net of controls, only two countries show poorer immigrant health and three countries show better immigrant health. The multivariate regression models net of controls show few differences in health status between immigrants and the native born. The age structure of immigrant populations is an important mediator of differences in health status compared to the native-born population.

INTRODUCTION

In the broader public discourse, immigrants have long been viewed as having poor health (Kraut 1994, Markel 2004). Historically, health status has been used as a barrier to acquiring naturalized citizenship (Molina 2006) as well as to entry (Barde and Bobonis 2006). One side of the debate views immigrants as unhealthy, specifically, less healthy than the native born population. This viewpoint, often driven by the media, relies on public perception and anecdotal evidence. Relatedly, this viewpoint could be affected by immigrant discrimination or anti-immigrant rhetoric. What is more, this position is generalistic, so it is unclear under what conditions it holds. Many reports are based on the experiences of immigrants in the US and Europe. Similarly, findings tend to emphasize more prominent dyadic relationships of sending and receiving countries (e.g., Mexican immigrants in the US). There is a more limited understanding of immigrant health worldwide.

Another view sees immigrants as healthier than the native born of the destination country. This has been characterized as a "paradox" (Acevedo-Garcia and Bates 2008 provide a review for the US case). In spite of difficulties (discrimination, acculturation, and language barriers), immigrants tend to be healthier, net of age, gender, ethnicity, and socioeconomic status (Fong 2008). This finding is prominent in the epidemiological literature on Latino immigrants in the US, where the "paradox" is that Latinos are healthier, by many measures, than non-Hispanic whites in the US. Similar paradoxes have been found across a variety of countries, ethnic groups, and health outcomes, predominantly in immigrant destinations like the US, Canada, and Europe (Beiser et al. 2002; Bennett 1993; Hyman 2000; Landale, Oropesa, and Gorman 2000; Weeks and Rumbaut 1991; Williams 1993). Townsend and Davidson (1982, p. 51), writing about the UK, suggest a selection mechanism: the "rather favourable [health] comparison

between immigrant and British-born males may also reflect the underlying tendency for migrants to select themselves on the grounds of health and fitness. Men and women prepared to cross oceans and continents in order to seek new occupational opportunities or a new way of life do not represent a random cross-section of humanity." However, the healthy immigrant approach is generalistic, so it is not clear under what conditions the "healthy immigrant paradox" exists.

The present study compares immigrant health across countries and immigrant groups worldwide, not just countries typically thought of as immigrant destinations. We examine the health of immigrants for 32 countries using the World Values Survey (1981–2005). In each country, we have data on self-rated health for immigrants and the native born population. We assess, on a country-by-country basis, whether there are differences between immigrants and the native born in self-rated health, a measure which has been shown to be well-correlated with mortality risk. We introduce demographic and socioeconomic control variables that are, by definition, missing from impressionistic descriptions of immigrant health. This paper puts immigrant health in comparative perspective by using regression models that control for demographic and socioeconomic characteristics, unlike the aforementioned stereotypes, which refer simply to a bivariate relationship.

METHODS

We use data from the World Values Survey (WVS), 1981–2005. The WVS is a set of integrable national surveys that ask the same questions in each country (World Values Survey n.d.). The WVS collects data on self-rated health and a variety of demographic and social characteristics of the respondents. Self-rated health is measured on a 5-point Likert scale. Since 1981, five waves of the WVS have collected nationally-representative samples. Respondents participated in a

face-to-face interview outside the home. For this study, we analyze the integrated five-wave public release data file that includes observations for 108,071 individuals from 32 countries for which health and immigrant status questions were asked in the same survey. The sample size ranges between 800 and 13,255 respondents per country (Serbian Republic of Bosnia, and South Africa, respectively).

The WVS surveys were conducted by locally-based survey organizations to ensure nationally-representative sample frames in each country. The local survey research organizations were responsible for final questionnaire translation, so, to the fullest extent possible, the surveys are comparable across countries. However, each of our analyses are within-country; we do not pool samples across countries. The questionnaires used in each country, and other technical information on the survey design, are documented on the WVS web page[1]. A number of notable cross-country studies have been produced using the WVS data (see, e.g., Inglehart 1990, Dalton 2004).

The WVS measures self-rated health through the following question: "All in all, how would you describe your state of health these days? Would you say it is: Very good; Good; Fair; Poor; Very Poor". We coded the health measure such that higher scores represent better health, ranging from 1 to 5. Self-rated health is known to be a valid indicator of underlying physical health (Mossey and Shapiro 1982, Idler and Benyamini 1997, Idler et al. 2000, Goldman and Glei 2007). Recently, self-rated health has come under scrutiny for its sensitivity to questionnaire wording after language translation (Bzostek et al. 2007), and for differential validity across social strata (Singh-Manoux et al. 2007, Dowd and Zajacova 2007, Huisman et al. 2007). In a study of the US, Finch et al. (2002) find that the predictive power of self-rated heath for mortality among immigrants varies by acculturation. Nonetheless, self-rated health often

[1] http://www.wvsevsdb.com/wvs/WVSDocumentation.jsp

remains the only available measure of health, objective measures being too expensive or impractical to collect in survey research covering large sample sizes across many countries. Social class is measured subjectively on a five-point scale. Respondents are asked to rate themselves as belonging to one of the following groups: "upper class" (coded 5), "upper middle class", "lower middle class", "working class", and "lower class" (coded 1).

Our approach is to compare the self-rated health of immigrants and the native born on a within-country basis, using ordinary least squares (OLS) regression. The OLS regression model assumes normally-distributed errors, while discrete outcomes such as self-rated health by definition have discrete error structures. Ordinary least squares regression is easy to interpret (for instance, there is direct comparability between the coefficients in our first set of models and the descriptive statistics). However, it is desirable to demonstrate robustness of the results when a discrete model is used. Therefore, we also replicated our results with ordinal logistic regression.

We run four models for each country. The first model is a bivariate comparison of health, with the test of the immigrant regression coefficient being equivalent to a *t*-test comparison of means for the two groups (immigrants, the native born). This is an overall measure of self-rated health in the two groups, without adjustment for demographic or social differences. This is an effective starting point for the comparison because, assuming that self-rated health reflects objective health, it corresponds to what a hypothetical observer would "see" by looking at the two groups. In the second model, we introduce sex as a control. The third model controls for age, age squared, and sex. These controls are among the most rudimentary in social research, but, even so, it is hard if not impossible for the casual observer to adjust for these factors as precisely as a regression model does. In the last model, we introduce subjective social class as a

control for socioeconomic status. For reliability, the sample was restricted to WVS countries in which the fourth model had at least 30 immigrants. We use the regression as a multivariate descriptive technique, not to establish causality. Sample weights were used throughout.

Within any country, the sample size is the same across all four regression models, and is given in the final column of table 1. Thus, sample selection due to missing values (e.g. on SES) is not the reason why the coefficients change. Sensitivity checks, where the models were run with all observations, and the sample sizes were therefore allowed to vary across models I–IV, did not show meaningful differences with the results as presented. Whenever we refer to statistical significance without explicit mention of a level, we mean that the *p*-value is less than 0.05.

RESULTS

Descriptive Statistics

<Table 1 about here>

Health

Table 1 provides weighted descriptive statistics of health, social class, and age for immigrant and native born respondents in 32 countries, listed by five geographical regions (Europe, the Former Soviet Union, Asia and Oceania, the Americas, and Africa) and in ascending order of mean immigrant health within each region. Table 1, column 1 indicates that Nigeria has the highest mean immigrant self-rated health (4.48), and Ukraine has the lowest mean immigrant self-rated

health (3.04). Among the native born (column 2), Canada has the highest self-rated health (4.20), and Ukraine and Russia (Table 1, column 2) have the lowest self-rated health (3.01). Figure 1 is a scatterplot of the 32 countries, with mean immigrant self-rated health on the x-axis and mean native born heath on the y-axis, and the line of equality is shown (this is not the regression line). Whiskers in each direction denote one standard error. We do not regress these data because the research question pertains to *within*-country differences, but the figure illustrates that immigrants' self-rated health lines-up fairly well with that of the native born in their destination countries. That is to say, in countries where the native born have lower mean self-rated health compared to other countries (e.g. the cluster of four countries in the lower left hand corner of the figure, around 3.00), immigrants in those countries also have lower mean self-rated health. This pattern is also demonstrated in countries with high mean self-rated health.

<Figure 1 about here>

figure caption:

Figure 1: Scatterplot of native-born versus immigrant self-rated health.

Social Class

Table 1, column 3, indicates that among immigrants, Mexico has the highest mean self-assessed social class (3.33) and Ukraine and the Serbian Republic of Bosnia have the lowest average self-assessed social class (2.35). Column 4 shows that among the native born, Switzerland has the highest mean self-assessed social class (3.33) and South Africa ranks the lowest (2.07).

Social class is relative, and difficult to compare across countries. However, what this study looks at is how social class, *as a regression control*, affects the coefficient of immigrant

status on self-reported health, across countries. We do not directly compare social class, per se, in different countries. Table 1 contains a difference (Δ) column, showing native born minus immigrant self-assessed social class. Interestingly, these social class differences are not typically statistically significant. There are nine countries in which there is statistical significance, and these are almost evenly split between immigrants having higher average self-assessed social class (four countries) and lower average self-assessed social class (five countries).

Age

Looking across the countries, immigrants tend to be older than the native born (Table 1, column 6). As indicated in column 6, Taiwan has the oldest immigrants with a mean age of 57.68, compared with Nigeria, which has the youngest (33.84). Among the native born (column 7), Switzerland has the oldest population (48.65) and Nigeria again has the youngest (33.17). Nigerian immigrants are drawn from other west African countries, which, like itself, have young age structures typical of growing populations.

Regression Analysis

<Table 2 about here>

Table 2 provides the regression coefficients and standard errors for an in-depth example (Estonia) of the regressions we ran for all countries. We chose Estonia because, typical of many countries in our analysis, it illustrates the loss of significance of the immigrant effect upon inclusion of a modest number of very basic controls. Table 2, model I contains no controls, and

is therefore simply the regression of self-rated health on immigrant status. The constant in model I (3.37) represents the mean value of self-rated health for the native born in Estonia — this may be verified by comparison with table 1. Similarly, the value of the immigrant coefficient in model I (-0.23) is the difference between mean self-rated health of immigrants and the native born in Estonia (again, this may be verified by comparison to table 1). The negative sign of the coefficient indicates that immigrants have lower self-rated health, and three stars indicate this difference is statistically significant at the .001 level.

Model II introduces a basic control variable: sex. In Estonia, females have poorer self-assessed health compared to males (and net of immigrant status) and this is significant at the .001 level. However, when controlling for sex, the negative health effect of being an immigrant is undiminished (-0.23). Model III introduces the demographic control of age (as age and age-squared). The age coefficient (-2.29) is reasonably strong and statistically significant at the .01 level. The effect of being 10 years older is roughly comparable to the immigrant effect in model I. More importantly, in the context of this study, the immigrant coefficient is no longer significant. Net of age structure and sex (i.e., model III), there is no statistical difference between immigrant and native-born self-rated health in Estonia. Moreover, it is age structure, not sex, which is responsible for the diminution of the effect of immigrant status on health (compare model II). Model IV adds self-assessed social class (0.15), which is itself statistically significant in the expected direction, but does not affect the immigrant coefficient. Net of age structure, there is no difference in self-rated health between immigrants and the native born in Estonia. The regression coefficients in table 2 are unstandardized since we wish to compare with means (table 1), and standardization would force the constant term to zero. Levels of significance are, of course, unaffected by using standardized or unstandardized coefficients.

<Table 3 about here>

Table 3 presents the results for all 32 countries, again grouped by region and in ascending order (based on model I) within each region. The values in the coefficient column are the unstandardized immigrant coefficients from the model, run for each country as described above in the Estonia example (table 2). Thus, table 3 is an abridged summary of table 2, replicated for all the countries in the sample. The key parameter, the immigrant coefficient, is presented for all four models, along with its standard error, and with significance level denoted by asterisks.

Model I (column 1) presents basic descriptive statistics on health, with no control variables. A mean comparison between immigrants and the native born indicates that, in ten of the 32 countries, immigrants have lower mean self-rated health at a level of significance of 5% or stronger. In three of the 32 countries (Puerto Rico, South Africa, Nigeria), immigrants have significantly better mean self-rated health compared to the native born. In model II, we control for sex, and in model III, for age (quadratric: age, age-squared) and sex. Age as a regression control alters the picture almost entirely.

Model III shows that net of age structure, only two countries (Macedonia and Switzerland) have significant differences in the direction of lower mean self-rated health of immigrants compared to the native born. The inclusion of age makes three countries (Moldova, Ukraine, Australia) have statistically significant higher immigrant health; two countries (South Africa, and Nigeria) also retain statistically-significant differences in mean self-rated health that favor immigrants over the native born.

In model IV, which includes basic controls for socioeconomic status, age, and sex, only two countries (Macedonia and Switzerland) maintain significantly negative immigrant mean self-rated health. What is more, in the face of control variables, immigrants in three countries (Moldova, Ukraine, and Nigeria) have significantly higher mean self-rated health compared to the native born. In each case (of immigrants having significantly higher and lower mean self-rated health) the numbers are more than would be expected by pure chance. Being a two-sided test, we expect 2.5% of the distribution to be in either tail. Thus by pure chance we expect about one country to be in each category; we see two and three countries, respectively.

The differences seen in model I mostly disappear upon the inclusion of basic demographic and socioeconomic control variables. While age structure is clearly the most important single control variable in making significance disappear for the immigrant coefficient, model IV (SES) does show some differences with model III. For instance, net of sex, age, and age squared in model IV, the immigrant coefficients for Australia and South Africa are no longer significant.

<Table 4 about here>

The regression coefficients provide the average difference in self-assessed health between immigrants and the native-born, net of the other regression controls. It does not, however, give the proportion in *poor* health — for example, a negative coefficient could mean that the native-born have an average self-assessed health of 4.50 and immigrants have an average score of 4.00. To address the question of poor health, per se, we summarized the proportion self-rating 1 or 2 ("very poor" or "poor") among the native born and immigrants in table 1. In most of the

countries in the study, there is no significant difference between immigrants and the native born in the proportion reporting poor health. However, of the seven countries in which there is a significant difference in the proportion reporting poor health, only one (Slovakia) did not also show a difference in mean self-rated health (table 1, bivariate *t*-tests). As discussed above, table 4 presents coefficients from ordinal logistic regression models, following those in table 3. The results are robust across the two model specifications.

DISCUSSION

Descriptively, in ten of 32 countries of the World Values Survey, immigrants have poorer self-assessed health. Thus, "what one sees," so to speak, of immigrant health (to the extent to which means can represent raw impressions), is, in many cases, that immigrants have poorer health. The stereotype of poorer health among immigrants would seem to be supported by this fact, in these ten countries.

Net of the most basic regression controls, we show that poorer immigrant health is a poor way to summarize the descriptive statistics from a sample of 32 countries around the world. We find that, net of controls, only two countries out of a sample of 32 have significantly lower mean immigrant self-rated health whereas three countries have significantly higher mean immigrant self-rated health. Even if one has doubts about how well self-rated health reflects objective health status, the extent to which significance disappears upon the inclusion of basic regression controls is striking. Health is closely linked with age, in all societies. Thus, among these controls, age structure is the strongest factor driving the coefficient changes. This points to immigrant age structure as a potentially fruitful way to look at immigrant health issues, as has been noted elsewhere (e.g., Palloni and Arias 2004). In some countries (Moldova, Ukraine,

Australia), age is responsible for making the immigrant coefficient significant, further evidence of the primary importance of age structure. In most of the countries we examine, immigrants are older on average, and should therefore be expected to have poorer health status — unless age is controlled for.

Though we find little evidence of immigrants as less healthy, our conclusions are limited due to a number of aspects of the study. One limitation is that we cannot control for the extent to which our measures are comparable across countries, as self-rated health and social class are assessed relatively and can be interpreted differently within countries. Due to data limitations, this study measures self-rated health as a proxy for objective health.

In general, it is preferable to have objective measures of socioeconomic status, such as income, but it is worth noting here that the goal is to stop at the *minimal* model that explains the observed differences in self-assessed health. Age can be a powerful confounder (Cohen 1986), and that is where the action is in our models. So, while we would prefer to have better measurement of socioeconomic status (SES), it is mostly a moot point. A second limitation of the present work is that self-assessed health may mean different things to immigrants and the native-born (Finch et al., 2002). Figure 1 shows remarkable similarities of native-born and immigrant self-assessed health levels. However, we cannot rule out that this may be driven by a sort of assimilation such that immigrant responses follow local social norms, and in so doing become less reflective of underlying physical health.

A third limitation is that this study is by design a broad international comparison and is not a replacement for in-depth country-level case studies of immigrant health. We consider immigrants as a monolithic group, whereas many countries have heterogeneous immigrant populations (e.g., Filipinos and Mexicans, among other groups, in the United States).

Furthermore, countries included in the World Values Survey are not selected completely at random, but must have the capacity to field a nationally-representative survey; thus conflict zones, for instance, are underrepresented.

In conclusion, the negative relationship between immigrant status and health is not robust to the inclusion of even the most rudimentary controls. Impressionistic senses of immigrant health that often come to the fore in public discourse, are closest to our results in model I (table 3). However, these do not withstand the scrutiny of models III and IV. In a sample of 32 countries from around the world, the self-rated health of immigrants do not differ, by and large, from that of the native born, on a within-country basis, net of demographic and socioeconomic characteristics.

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Table 1. Descriptive Statistics of Immigrants and Native Borns in 32 Countries

	Health				Social Class					Age				% Female				% Poor Health				% Immigran	N
	Immigrant		Native Born		Immigrant		Native Bor		Δ	Immigrant		Native Born		Immigrant		Native Born		Immigrant		Native Born			
Country	mean	SD	mean	SD	mean	SD	mear	SD		mean	SD	mean	SD										
Ukraine	3.04	0.04	3.01	0.02	2.35	0.04	2.33	0.02	-0.02	48.14 **	0.88	45.41	0.34	60.2	**	59.2		20.5		24.0		13.4	2633
Moldova	3.05	0.10	3.04	0.03	2.62	0.09	2.51	0.03	-0.11	49.54 ***	1.83	42.57	0.54	59.5	***	50.4		21.6		25.7		7.6	969
Russia	3.06	0.08	3.01	0.02	2.71 *	0.09	2.49	0.02	-0.23	45.93	1.52	46.55	0.39	51.3		58.7		23.5		23.0		6.0	1918
Belarus	3.07	0.05	3.02	0.02	2.73 ***	0.04	2.58	0.02	-0.15	45.02	0.94	44.16	0.41	53.1		58.4		23.1		23.1		14.9	1978
Estonia	3.14 ***	0.05	3.37	0.03	2.37 ***	0.05	2.66	0.03	0.30	47.94 ***	0.78	41.72	0.58	58.9	***	55.1		17.4	*	11.3		28.6	1002
Latvia	3.14 *	0.05	3.29	0.02	2.45	0.05	2.48	0.02	0.03	49.09 ***	0.92	40.68	0.52	51.9	***	55.9		18.5	**	11.6		20.1	1161
Lithuania	3.14	0.11	3.36	0.03	2.54	0.09	2.62	0.02	0.08	47.16	1.86	43.54	0.56	57.1		49.1		21.4		14.1		7.1	981
Georgia	3.16 **	0.10	3.50	0.02	2.62 **	0.09	2.90	0.02	0.27	51.96 ***	1.76	40.00	0.37	73.5	***	54.2		24.5	**	12.9		4.9	1990
Slovakia	3.21	0.16	3.51	0.03	2.73	0.10	2.58	0.02	-0.15	50.00 *	2.81	44.26	0.50	66.7	*	48.9		24.2	*	11.3		3.1	1077
Slovenia	3.26	0.11	3.39	0.03	2.56	0.09	2.72	0.03	0.17	45.27	1.31	43.40	0.56	52.2		53.1		22.2		18.6		9.6	934
Taiwan	3.26 *	0.17	3.61	0.04	2.68	0.19	2.99	0.04	0.31	57.68 ***	3.02	40.31	0.44	29.0	***	51.2		19.4	*	8.6		4.4	705
Czech Republic	3.26 *	0.14	3.55	0.03	2.64	0.11	2.54	0.02	-0.10	53.60 *	2.65	47.49	0.51	46.0	*	57.1		16.0		9.1		4.5	1111
Armenia	3.27 ***	0.06	3.50	0.02	2.74 *	0.06	2.88	0.02	0.14	44.28 ***	1.13	37.17	0.38	58.0	***	52.5		19.8	***	9.5		10.6	1961
Croatia	3.29	0.18	3.56	0.03	2.58	0.14	2.72	0.03	0.14	42.63	2.40	43.03	0.52	44.7		52.2		15.8		12.8		3.6	1050
Bosnia Federation	3.29 ***	0.13	3.75	0.03	2.74	0.18	2.76	0.03	0.01	50.65 ***	2.95	40.77	0.51	48.4	***	41.6		9.7		7.8		3.9	786
Macedonia	3.35 **	0.16	3.87	0.03	2.41	0.13	2.52	0.03	0.11	44.65	2.97	40.01	0.45	76.5		47.2		20.6	**	6.6		3.5	959
Azerbaijan	3.40 *	0.12	3.66	0.02	3.06	0.09	3.02	0.02	-0.04	44.97 ***	2.54	36.20	0.30	60.0	***	51.1		8.6		4.5		1.8	1976
Serbian Rep. of Bosnia	3.41	0.11	3.49	0.05	2.35 ***	0.09	2.86	0.06	0.51	43.42	1.45	40.77	0.82	41.0		43.9		14.5		12.3		22.6	368
Turkey	3.43	0.22	3.71	0.03	2.85	0.16	2.63	0.03	-0.22	46.35 **	3.24	36.66	0.43	48.3	**	48.8		18.8		8.0		1.5	1771
Mexico	3.52	0.17	3.62	0.02	3.33 ***	0.19	2.70	0.02	-0.64	41.70 *	2.94	34.93	0.29	30.3	*	48.6		12.1		10.0		1.5	2199
Argentina	3.70	0.10	3.72	0.03	2.48	0.08	2.62	0.03	0.14	49.96 ***	1.83	42.21	0.57	46.7	***	52.6		11.4		10.2		10.1	1034
West Germany	3.71	0.16	3.68	0.03	3.11	0.15	3.23	0.03	0.12	39.37	2.40	41.63	0.55	52.6		54.8		10.5		7.7		4.3	887
Sweden	3.98	0.11	4.15	0.03	2.75	0.14	2.89	0.03	0.14	44.77	2.07	44.25	0.56	57.4		46.8		3.3		4.7		7.0	866
Switzerland	4.05 *	0.05	4.19	0.02	3.22 *	0.05	3.33	0.02	0.11	50.35	0.95	48.65	0.43	56.9		50.7		3.9		2.1		13.4	2319
New Zealand	4.07	0.05	4.16	0.02	2.92	0.05	2.86	0.02	-0.06	51.55 ***	0.88	47.27	0.43	51.0	***	55.0		3.3		2.7		17.6	1810
Norway	4.12	0.15	4.14	0.03	3.12	0.14	2.89	0.03	-0.23	41.27	1.99	43.43	0.53	44.2		49.8		7.7		5.4		5.1	1017
Puerto Rico	4.13 **	0.09	3.86	0.03	2.76	0.10	2.72	0.03	-0.04	37.08 ***	1.32	43.40	0.50	71.0	***	63.9		5.4		8.4		8.3	1124
Australia	4.16	0.04	4.08	0.02	2.86	0.04	2.85	0.02	-0.02	43.86 *	0.87	41.43	0.50	45.4	*	51.9		4.2		5.0		20.6	1951
South Africa	4.23 **	0.10	3.90	0.02	3.09 ***	0.15	2.07	0.02	-1.02	43.29 ***	1.51	37.68	0.31	36.7	***	52.1		4.0		9.8		2.3	2799
Canada	4.25	0.05	4.20	0.03	2.96	0.05	2.97	0.03	0.01	47.86	1.06	46.89	0.57	54.2		51.5		2.6		3.8		21.6	2045
United States	4.26	0.08	4.15	0.03	2.89	0.10	2.95	0.03	0.07	39.30 **	1.64	44.60	0.54	52.5	**	51.7		2.5		3.7		6.0	1453
Nigeria	4.48 **	0.15	4.05	0.02	3.11	0.28	2.58	0.03	-0.54	33.84	1.93	33.17	0.28	46.9		48.5		3.4		3.7		1.4	1808

Statistical significance of difference between immigrants and the native born: *** p<0.001, ** p<0.01, * p<0.05

Table 2: OLS Regression Coefficients of Self-Rated Health for Estonia

	Model I		Model II		Model III		Model IV	
Immigrant	-0.23	***	-0.23	***	-0.10		-0.06	
	(0.06)		(0.06)		(0.05)		(0.05)	
Female			-0.23	***	-0.18	***	-0.16	***
			(0.05)		(0.05)		(0.05)	
Age/100					-2.29	**	-2.49	**
					(0.87)		(0.86)	
(Age/100)^2					0.26		0.67	
					(0.97)		(0.96)	
Social class							0.15	***
							(0.03)	
Constant	3.37	***	3.5	***	4.37	***	3.96	***
	(0.03)		(0.04)		(0.18)		(0.20)	

N=1002
Robust standard errors in parentheses
*** p<0.001, ** p<0.01, * p<0.05

Table 3. OLS Regression Coefficients of Immigrant Self-Rated Health for 32 Countries

	Model I		Model II		Model III		Model IV	
Country (by region)	oefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Europe								
Macedonia	-0.52 **	0.16	-0.48 **	0.16	-0.39 **	0.15	-0.38 *	0.15
Bosnia Federation	-0.46 ***	0.13	-0.45 ***	0.13	-0.22	0.12	-0.23	0.12
Slovakia	-0.30	0.16	-0.25	0.16	-0.11	0.14	-0.15	0.15
Czech Republic	-0.29 *	0.14	-0.30 *	0.14	-0.16	0.12	-0.19	0.12
Turkey	-0.28	0.22	-0.28	0.22	-0.14	0.20	-0.17	0.19
Croatia	-0.27	0.18	-0.27	0.18	-0.28	0.18	-0.25	0.18
Sweden	-0.17	0.11	-0.15	0.11	-0.14	0.10	-0.12	0.10
Slovenia	-0.13	0.11	-0.13	0.11	-0.08	0.11	-0.03	0.11
Switzerland	-0.13 *	0.05	-0.13 *	0.05	-0.13 *	0.05	-0.11 *	0.05
Serbian Rep. of Bosnia	-0.08	0.12	-0.08	0.12	-0.02	0.11	0.05	0.12
Norway	-0.02	0.16	-0.03	0.16	-0.08	0.15	-0.10	0.15
West Germany	0.03	0.16	0.03	0.16	-0.01	0.17	0.01	0.17
Former Soviet Union								
Georgia	-0.33 **	0.10	-0.26 **	0.10	0.04	0.09	0.07	0.08
Azerbaijan	-0.26 *	0.12	-0.25 *	0.12	-0.09	0.10	-0.11	0.10
Estonia	-0.23 ***	0.06	-0.22 ***	0.05	-0.10	0.05	-0.06	0.05
Armenia	-0.23 ***	0.07	-0.22 ***	0.07	-0.08	0.06	-0.07	0.06
Lithuania	-0.22	0.11	-0.21	0.11	-0.12	0.10	-0.11	0.10
Latvia	-0.15 *	0.06	-0.15 **	0.06	0.00	0.06	-0.01	0.05
Moldova	0.02	0.11	0.04	0.10	0.21 *	0.09	0.18 *	0.09
Ukraine	0.03	0.04	0.03	0.04	0.09 *	0.04	0.08 *	0.04
Belarus	0.05	0.05	0.03	0.05	0.05	0.05	0.02	0.05
Russian Federation	0.06	0.08	0.04	0.08	0.03	0.07	0.01	0.07
Asia/Oceania								
Taiwan Prov. of China	-0.35 *	0.17	-0.39 *	0.17	-0.01	0.18	-0.01	0.19
New Zealand	-0.09	0.05	-0.08	0.05	-0.06	0.05	-0.07	0.05
Australia	0.09	0.05	0.08	0.05	0.10 *	0.05	0.09	0.05
Americas								
Mexico	-0.11	0.17	-0.11	0.17	-0.03	0.16	-0.13	0.15
Argentina	-0.02	0.10	-0.03	0.10	0.06	0.10	0.09	0.10
Canada	0.06	0.06	0.06	0.06	0.07	0.05	0.07	0.05
United States	0.11	0.08	0.11	0.08	0.04	0.08	0.05	0.08
Puerto Rico	0.27 **	0.10	0.28 **	0.10	0.15	0.10	0.15	0.10
Africa								
South Africa	0.33 **	0.10	0.30 **	0.10	0.42 ***	0.10	0.19	0.10
Nigeria	0.42 **	0.15	0.42 **	0.15	0.43 **	0.15	0.39 *	0.16

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

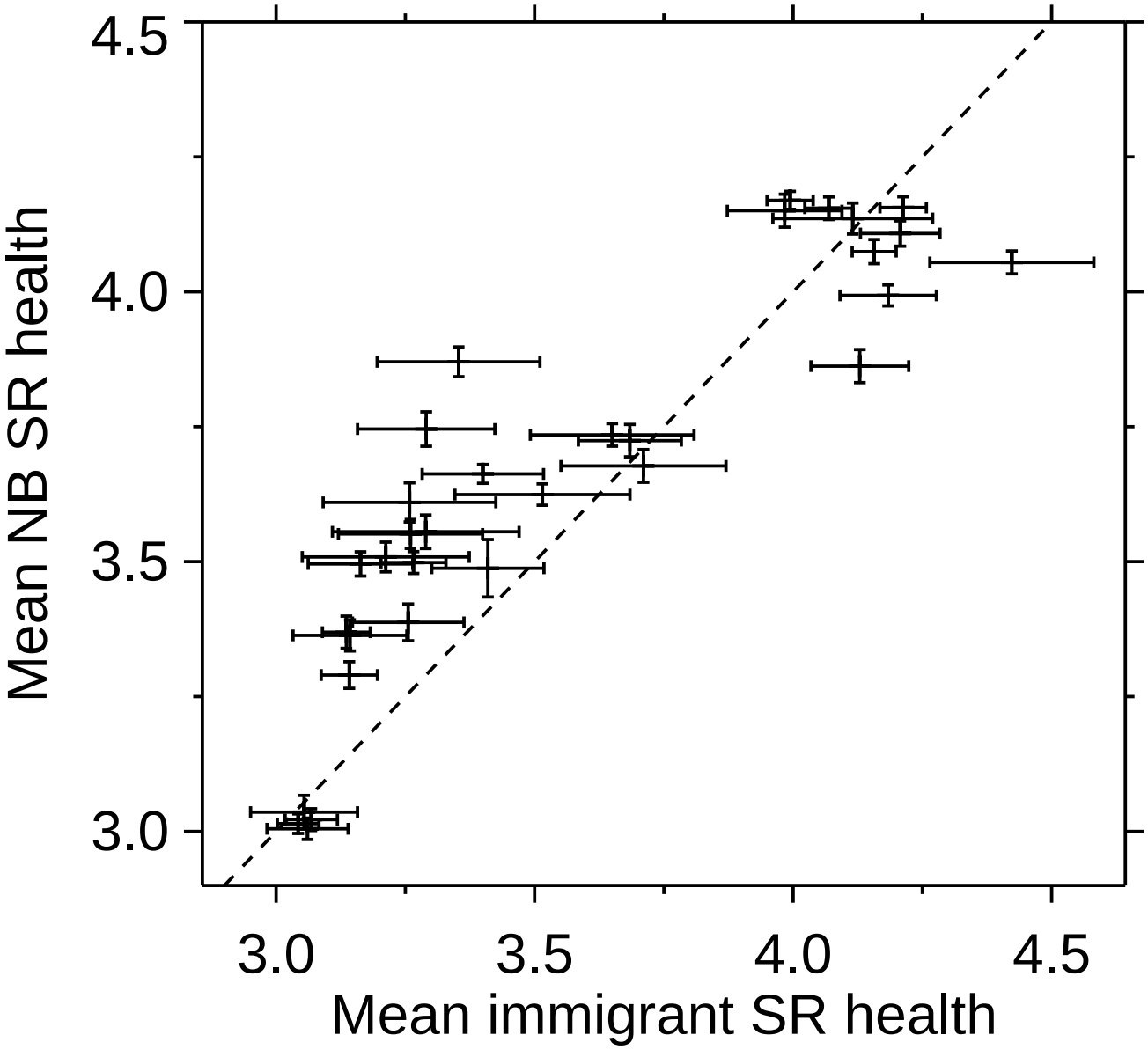
Note: model 1 includes no controls; model 2 includes controls for sex; model 3 includes controls for age and age squared; model 4 includes controls for sex, age, age squared.

Table 4. Ordinal Logistic Regression Coefficients of Immigrant Self-Rated Health for 32 Countries

	Model I		Model II		Model III		Model IV	
Country (by region)	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Europe								
Macedonia	-1.05 ***	0.31	-0.97 **	0.31	-0.81 **	0.31	-0.81 **	0.31
Bosnia Federation	-1.00 ***	0.27	-0.99 ***	0.27	-0.55 *	0.27	-0.60 *	0.29
Slovakia	-0.70 *	0.35	-0.58	0.36	-0.30	0.34	-0.38	0.36
Czech Republic	-0.60 *	0.29	-0.63 *	0.30	-0.31	0.31	-0.40	0.31
Turkey	-0.56	0.48	-0.56	0.48	-0.32	0.46	-0.41	0.45
Croatia	-0.40	0.31	-0.40	0.31	-0.53	0.37	-0.49	0.38
Sweden	-0.39	0.24	-0.35	0.24	-0.33	0.23	-0.30	0.23
Switzerland	-0.29 *	0.14	-0.29 *	0.14	-0.29 *	0.14	-0.26	0.14
Slovenia	-0.19	0.20	-0.19	0.20	-0.11	0.24	-0.04	0.23
Serbian Rep. of Bosni	-0.18	0.24	-0.18	0.24	-0.09	0.26	0.08	0.26
Norway	0.15	0.31	0.14	0.31	0.06	0.31	-0.02	0.31
West Germany	0.04	0.38	0.03	0.38	-0.07	0.42	-0.01	0.42
Former Soviet Union								
Azerbaijan	-0.62 *	0.30	-0.60 *	0.30	-0.24	0.29	-0.28	0.28
Georgia	-0.61 **	0.20	-0.49 *	0.20	0.12	0.19	0.17	0.18
Estonia	-0.53 ***	0.13	-0.51 ***	0.13	-0.21	0.14	-0.11	0.14
Armenia	-0.50 ***	0.15	-0.49 ***	0.15	-0.20	0.14	-0.17	0.14
Lithuania	-0.47 *	0.24	-0.45	0.24	-0.33	0.25	-0.32	0.24
Latvia	-0.35 *	0.15	-0.37 *	0.15	-0.01	0.15	-0.04	0.15
Republic of Moldova	0.01	0.20	0.06	0.20	0.41 *	0.21	0.35	0.20
Ukraine	0.07	0.10	0.08	0.10	0.25 *	0.10	0.23 *	0.10
Belarus	0.09	0.12	0.06	0.12	0.13	0.13	0.06	0.13
Russian Federation	0.14	0.19	0.10	0.19	0.09	0.20	0.03	0.20
Asia/Oceania								
Taiwan Prov. of China	-0.76 *	0.37	-0.84 *	0.38	-0.05	0.40	-0.05	0.41
New Zealand	-0.20	0.12	-0.20	0.12	-0.14	0.12	-0.16	0.12
Australia	0.19	0.11	0.19	0.11	0.22 *	0.11	0.22 *	0.11
Americas								
Mexico	-0.32	0.36	-0.33	0.36	-0.18	0.35	-0.35	0.32
Argentina	-0.03	0.21	-0.04	0.21	0.13	0.20	0.19	0.21
Canada	0.12	0.13	0.12	0.13	0.14	0.14	0.13	0.14
United States	0.19	0.19	0.19	0.19	0.04	0.20	0.06	0.21
Puerto Rico	0.52 *	0.21	0.55 **	0.21	0.35	0.22	0.34	0.22
Africa								
South Africa	0.55 **	0.19	0.50 **	0.19	0.72 **	0.20	0.32	0.22
Nigeria	1.02 *	0.40	1.01 *	0.41	1.03 *	0.41	0.97 *	0.43

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

Note: model 1 includes no controls; model 2 includes controls for sex; model 3 includes controls for age and age squared; model 4 includes controls for sex, age, age squared.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4.0
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Mean NB SR health
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Mean immigrant SR health