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Migrant Selection and the Health of U.S. Immigrants From the Former Soviet Union

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Abstract Few prior studies have investigated the health of U.S. immigrants from the former Soviet Union (FSU). Utilizing data from the 2000 U.S. census and the 2000–2007 National Health Interview Survey (NIHS), we compare levels of disability of FSU immigrants with U.S.-born whites (ages 50–84). Our findings suggest an "epidemiologic paradox" in that FSU immigrants possess higher levels of education compared with U.S.-born whites, but report considerably higher disability with and without adjustment for education. Nonetheless, FSU immigrants report lower levels of smoking and heavy alcohol use compared with U.S.-born whites. We further investigate disability by period of arrival among FSU immigrants. Changes in Soviet emigration policies conceivably altered the level of health selectivity among émigrés. We find evidence that FSU immigrants who emigrated during a period when a permission to emigrate was hard to obtain (1970–1986) displayed less disability compared with those who emigrated when these restrictions were less stringent (1987–2000). Finally, we compare disability among Russian-born U.S. immigrants with that of those residing in Russia as a direct test of health selectivity. We find that Russian immigrants report lower levels of disability compared with Russians in Russia, suggesting that they are positively selected for health despite their poor health relative to U.S.-born whites.

Keywords Immigration · Health · Disability · Former Soviet Union · USA

Introduction

More than 15% of Americans today are foreign-born, compared with about 5% in 1970, and more than 1 million foreign-born persons are granted permanent residency in the

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United States annually (U.S. Department of Homeland Security 2009; Migration Policy Institute 2007). The growth and size of the U.S. foreign-born population has prompted renewed interest in the relative health status of foreign-born Americans compared with native-born Americans as well as in the determinants of health among the foreign-born. With few exceptions, this literature finds that the foreign-born display better health and lower mortality than U.S.-born whites and U.S.-born groups of similar race/ethnicity, net of demographic and socioeconomic differences (Argeseanu Cunningham et al. 2008; Elo et al. 2011; Fang et al. 1996; Frisbie et al. 2001; Hummer et al. 1999b; Markides and Eschbach 2005; Read and Emerson 2005; Singh and Siahpush 2002).

Despite a large number of studies on the health of the U.S. foreign-born population, there are numerous gaps in our knowledge about the role of migrant selectivity. Most prior research has focused on Hispanics. Studies of the non-Hispanic foreign-born have focused mostly on nonwhite groups, with scant attention given to those born in eastern Europe, a group whose absolute numbers in the United States grew substantially during the 1990s (Dixon 2005). Even less attention has also been given to foreign-born subgroups composed primarily of refugees. Importantly, few prior studies have compared the health of immigrants with that of their origin populations, which is the most appropriate comparison to measure the magnitude of health selection (for exceptions, see Angel et al. (2008) and Rubalcava et al. (2008)).

Using the case of those born in the former Soviet Union (FSU), we address these existing research gaps. Between 1970 and 2000, more than 600,000 FSU-born individuals were granted permanent residency in the United States (authors' tabulations from U.S. Department of Justice sources). Little is known about the health status of this population relative to native-born white U.S. residents or to those who stayed behind. We compare the health of FSU immigrants with that of U.S.-born whites, controlling socioeconomic status (SES) and behavioral mediators (e.g., smoking and alcohol consumption). Following prior work, we next examine differences in health status among FSU immigrants by period of migration and age at migration. Finally, we measure the magnitude of health selection by comparing levels of disability among Russian-born U.S. immigrants with levels of disability among Russians who did not emigrate; this comparison is limited to Russians because of data availability.

We draw on two data sets from the United States (the 2000 U.S. Census of Population and the 2000–2007 National Health Interview Survey (NHIS)) and one data set from Russia (Russia Longitudinal Monitoring Study (RLMS)). We use two self-reported disability outcomes as broad markers of health: functional limitations (e.g., walking, climbing, reaching) and limitations in activities of daily living (ADL) (e.g., bathing, dressing). Our focus is on older adults (ages 50–84) because the population-level burden of disability at older ages is considerably higher than at younger ages.

Background

Migration From the Former Soviet Union to the United States

Two main waves of emigration from the Soviet republics during the latter part of the twentieth century have been described (Cohen and Haberfeld 2007). The first began in 1968 and lasted into the mid-1980s. It is estimated that roughly one-quarter of a

million Jews (and smaller numbers of other ethnic minorities) left the Soviet Union during this period (Remennick 2007:4). A second and much larger wave began in the late 1980s. This second wave comprised about 1.5 million émigrés (Cohen and Haberfeld 2007), with nearly one-half million individuals receiving permanent residency in the United States during the 1990s (authors' tabulations from U.S. Department of Justice sources).

During the first wave, migrants were required to obtain exit visas in order to leave the Soviet Union. Numerous administrative barriers were put in place by the Soviet government, which prevented many from acquiring an exit visa (Lazin 2005:31; Remennick 2007; Zaslavsky and Brym 1983:47–48). The process to obtain a visa was especially precarious for Jews:

> The rigorous application process and the waiting period during which decisions on applications were made were a means of deterring applicants. [A]pplying to emigrate brought immediate and often irreversible repercussions. Submission of an application often resulted in sustained harassment. In some cases, an applicant voluntarily left her or his job in order to avoid unpleasant consequences (such as ostracism by co-workers or superiors). Difficulties with neighbors and local authorities were not unusual. (Salitan 1992:53–54)

Jews who successfully obtained an exit visa were allowed to leave for "stopover" transit centers in Vienna and Rome as well as other places in western Europe, where they were given the choice of proceeding to Israel or applying for a U.S. refugee visa. During this period, the United States had a virtual "open door" policy, granting refugee status to nearly all applicants who applied in the transit centers, and most moved to the United States soon after refugee status was granted (Beyer 1991:33–42). Throughout most of the 1980s, the majority of those in the transit centers opted for the United States (Dominitz 1997).

Beginning in the late 1980s, exiting the Soviet Union became easier as many formal and informal barriers were removed (Salitan 1992:66–67). In 1991, the Soviets recognized the right of all citizens to travel, virtually eliminating any restrictions on leaving the country (Dietz 2003). At the same time that Soviet restrictions on emigration were easing, U.S policy toward admitting Jews and others from the Soviet Union was also undergoing transformations. Those seeking immigration to the United States were now able to apply for U.S. visas directly from the Soviet Union, and the Vienna and Rome transit centers were being phased out. Beginning in 1989, the United States prioritized those with familial or other ties in the United States (Beyer 1991; Remennick 2007). The new U.S. policy resulted in a large share of individuals with no ties to the United States being unable to obtain visas and choosing to migrate to other major destination countries, including Israel and Germany (Cohen and Haberfeld 2007; Dietz 2000).

Nonetheless, FSU migration to the United States was much larger in the 1990s (approximately 480,000) than in the previous two decades combined (approximately 110,000) (authors' tabulations from U.S. Department of Justice sources). By the end of the 1990s, an increasing proportion were granted employment, diversity, or "immediate relative" visas. Figure 1 highlights the changing visa profile of FSU immigrants receiving permanent residency in the United States during the 1980s and 1990s.

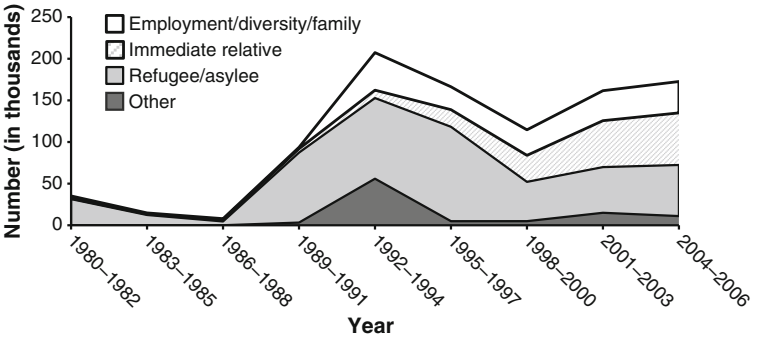

Fig. 1 Number of immigrants born in the former Soviet Union awarded permanent residency by major visa entry category and year (in thousands), 1980–2006. Data are based on year granted permanent residency, which may not reflect actual year of entry to the United States. Some refugees initially enter the United States on a temporary refugee visa and subsequently adjust their status to permanent residents. The figure reflects year of adjustment to permanent refugee status. Diversity visas were awarded beginning in 1992. Immediate relatives include spouses, minor children, and parents of U.S. citizen. "Other" category includes parolees and other visa classes. Data are from author tabulations from U.S. Department of Justice (1980–1981/1986–1991, 1982–1985, 1992–2001) and U.S. Department of Homeland Security (2002–2004, 2005–2006)

Disability Among Immigrants From the Former Soviet Union

Disability is defined as difficulty performing activities in any domain of life and is considered to be a culmination of biological and social mechanisms operating across the lifespan (Verbrugge and Jette 1994). The biopsychosocial model of disability advocated by the World Health Organization (WHO) conceptualizes disability as a function of both intrinsic health conditions and an individual's external social and physical environment (WHO 2002).

Schoeni et al. (2008) elaborated on this model and identified major social and biological influences on late-life disability that operate across the life course. The most proximate determinants of disability are closely linked to acute and chronic conditions, which themselves are influenced by numerous social, behavioral, and biological antecedents (Kuh and Ben-Shlomo 1997; Schoeni et al. 2008). Poor health in early childhood, for example, may lead to worse educational and labor market outcomes, which can influence later health through a variety of mechanisms related to socioeconomic attainment (e.g., ability to purchase medical care, environmental exposures, stress) (Schoeni et al. 2008). Others have linked fetal undernutrition to the risk of chronic conditions that emerge during adulthood (Barker 1993; Barker and Clark 1997). During early and middle adulthood, factors such as smoking, physical activity, nutrition, obesity, and other health-related behaviors (including appropriate medical care) also contribute to health in later life (Schoeni et al. 2008), and some of these factors may also be present during childhood and adolescence.

This framework, which emphasizes both short- and long-term influences, suggests that disability among migrants will be affected by factors that are present in both sending and receiving areas. As indicated earlier, most FSU immigrants arriving in the United States prior to 2000 migrated during the late 1980s and 1990s, and therefore they would have been exposed to living conditions in the Soviet Union and the political and economic turmoil surrounding its collapse in 1991. Much

research has focused on health in the Soviet republics during the period before and after the Soviet collapse (e.g., Cockerham 1999; Leon et al. 1997; McKee and Shkolnikov 2001; Men et al. 2003; Shkolnikov et al. 1998; Stillman 2006; Walberg et al. 1998). Male life expectancy in Russia, for example, fell from approximately 65 years in 1987 to 58 years in 1994, with female life expectancy also falling by about 3 years during the same period (Leon et al. 1997). At the same time, other Soviet republics also experienced "mortality crises" to varying degrees (Shkolnikov et al. 1998). Lifestyle factors, particularly heavy alcohol consumption ("binging"), have been implicated as proximate causes of the mortality rise (Britton and McKee 2000; Leon et al. 1997). Increased alcohol consumption is thought to be influenced at least in part by psychosocial stresses associated with the large-scale social upheavals and the reductions in the price of alcohol relative to other consumer goods (Leon et al. 1997; Shkolnikov et al. 1998). The smoking prevalence among adult males in the former Soviet republics is also high, at about 56%—a level more than double that of U.S. males (Gilmore et al. 2004). Information on disability and chronic diseases in the FSU during this period are less readily available, but prior work suggests a high level of negative self-perceived health (Andreev et al. 2003; Bobak et al. 2004; Carlson 1998) and disability (Bobak et al. 2004) compared with that found in western Europe. These health differences are most stark at middle and older ages (Andreev et al. 2003; Bobak et al. 2004).

Whether FSU migrants to the United States also display similar patterns of health compared with those who did not migrate is not known. Drawing from theories on migration and health, we expect that FSU immigrants are not a random sample of the sending populations because immigrants are considered to be positively selected on health and other traits (e.g., motivation) (Jasso et al. 2004). Potential migrants who are healthy may be more likely to have the material resources and social networks needed to obtain visas, seek employment in a foreign country, and incur the financial and emotional strains of migration compared with unhealthy individuals (Cho et al. 2004; Landale et al. 2000). Poor health, on the other hand, poses a barrier for overcoming the geographic, material, and social dislocations that migration brings.

Although the foreign-born may be initially selected on favorable health, the experience of migration may have negative health consequences possibly because of the stresses of acquiring a visa ("visa stress") and other social and economic stresses associated with migration (Jasso et al. 2005). Furthermore, exposure to the U.S. environment is generally believed to have negative health consequences for the foreign-born, at least for populations whose health behaviors and diets are more favorable than in the United States (e.g., Cho et al. 2004; Harley and Eskenazi 2006; Hummer et al. 1999a). One pathway through which the U.S. environment may have negative health consequences is through the acquisition of poorer diets and negative health-related behaviors, such as smoking (Antecol and Bedard 2006; Singh and Siahpush 2002).

Limited U.S. research based on small and unrepresentative samples of FSU immigrants indicate that, in contrast to other immigrant groups, they have worse health than U.S.-born whites. For example, Russian immigrants (n = 204) in Colorado had a higher prevalence of hyperlipidemia and hypertension than U.S.-born whites at ages 55–64 (Mehler et al. 2001). Similarly, FSU immigrants (n = 47) admitted to a New York City hospital for chest pain or shortness of breath had higher levels of

hypertension and other coronary risk factors than U.S.-born white admissions (Fridman et al. 2006). FSU immigrants in Israel also appear to have worse health than the Israeli-born population, with immigrants reporting poorer self-rated health and higher levels of chronic disease (ages 45–65) (Baron-Epel and Kaplan 2001). To our knowledge, no study has compared the health of FSU immigrants with the health of those remaining in the FSU.

Study Objectives

We expand on previous literature by investigating differences in disability between FSU immigrants and U.S.-born whites. Prior research on other immigrant groups indicates that the U.S. foreign-born health advantage is partly a function of lower levels of risky health-related behaviors among the foreign-born compared with the native-born (Antecol and Bedard 2006; Singh and Siahpush 2002). It is speculated that the low levels of risky health behaviors among the foreign-born arise from normative values in the sending countries (Cho et al. 2004; Frisbie et al. 2001). In contrast to most other foreign-born groups, FSU immigrants arrive from a region with high levels of smoking and alcohol use, particularly among males. Thus, the pattern of health and health behaviors found among other immigrant groups may not be present among those arriving from the FSU. Using data from the NHIS, we examine whether FSU immigrants are more likely to engage in risky health behaviors than native-born whites and whether these differences could help explain variations in disability between FSU immigrants and U.S.-born whites.

Second, we also investigate heterogeneity in disability among FSU immigrants. Jasso et al. (2004) suggested that the economic and political circumstances at the time of migration will influence the strength of migrant selectivity. Theoretically, a change in governmental policy will alter the level of selectivity through changes in political and administrative hurdles that must be overcome for individuals to migrate. We speculate that FSU immigrants who arrived in the United States during the first wave (1970–1986) will be a more highly select group than those who arrived during the second wave (1987–2000) because the earlier migrants had to overcome significant institutional barriers to obtain exit visas. Those who came after 1986 would have experienced fewer difficulties in obtaining exit visas, and they would also have been directly exposed to the macro-level structural changes that took place in the Soviet Union in the late 1980s and early 1990s. Thus, we hypothesize that those who arrived in the earlier period have lower levels of disability than those who came more recently.

We further speculate that those who arrived at the working ages will be a healthier group than those who came at older ages. Health selection is thought to be strongest at the working ages when individuals are most likely to migrate for economic reasons (Marmot et al. 1984; Palloni and Ewbank 2004; Sharma et al. 1990). For example, in a study of foreign-born U.S. blacks, Elo et al. (2011) found that younger working-age arrivals reported lower levels of disability than those who arrived at ages 55 and older. Finally, we directly test the magnitude of health selection by comparing disability levels among Russian-born U.S. residents with those among native-born Russians residing in Russia.

Data

We use the 5% Public Use Microdata Sample (PUMS) of the 2000 U.S. census. The PUMS is a weighted subsample of all housing units that received the census long form in 2000 (U.S. Census Bureau 2003). PUMS data are publicly available and can be obtained through the University of Minnesota's Integrated Public Use Microdata Series (Ruggles et al. 2004). Although the PUMS contains both institutionalized and noninstitutionalized individuals, we restrict our analysis to the noninstitutionalized population to be consistent with the other data used in this analysis. The PUMS contains imputed values for missing data, and we also exclude observations with imputed values for place of birth (9%). Our final sample size is 9,312 FSU immigrants ages 50–84 who entered the United States between 1970 and 2000. Our sample of U.S.-born non-Hispanic whites, the group used as a reference category in portions of the analysis, consists of 2,599,559 respondents. Results from sensitivity analyses excluding observations with at least one imputed value on any covariate (8%) are similar to those presented here.

A second data source is the National Health Interview Survey (NHIS), which is an annual nationally representative survey of the health of the noninstitutionalized U.S. population. The NHIS contains a smaller sample of FSU immigrants than the census but has the advantage of possessing detailed measures of disability that have been extensively used in prior studies of the foreign-born (e.g., Cho et al. 2004; Frisbie et al. 2001; Read and Emerson 2005). The NHIS also allows us to investigate the mediating role of health behaviors. We combine eight NHIS waves (2000–2007) to obtain an adequate number of FSU immigrants. The publicly released versions of the NHIS prior to 2000 do not permit us to identify individuals who were born in the FSU. We obtain the 2000–2006 surveys from the Integrated Health Interview Series, which contain a harmonized set of NHIS variables (Minnesota Population Center 2008a). The 2007 NHIS survey comes directly from the National Center for Health Statistics (NCHS). The sample sizes of FSU immigrants and U.S.-born non-Hispanic whites ages 50–84 are 257 and 63,700, respectively. The number of cases with at least one missing covariate is small (~6%) with the exception of body mass index (BMI), which is absent for an additional 6% of respondents. Our analytic sample in the NHIS thus includes 219 FSU immigrants and 57,626 U.S.-born non-Hispanic whites.

There are differences in the census and NHIS samples. First, we cannot limit FSU immigrants in the NHIS to those who arrived in the United States during 1970–2000 because of the aggregation of arrival times in the NHIS. Therefore, the NHIS sample includes individuals who arrived before 1970 and after 2000. Inclusion of FSU immigrants arriving before 1970 should not pose a problem because few were allowed to leave the Soviet Union in the years prior to 1970. However, many FSU immigrants came after 2000, and post-2000 migrants may be compositionally distinct from their predecessors because a growing proportion entered on employment-based or diversity visas rather than refugee visas.

Data on the Russian population are drawn from the Russia Longitudinal Monitoring Study-Higher School of Economics (RLMS-HSE, which we refer to subsequently as RLMS; see http://www.cpc.unc.edu/projects/rlms-hse and http://www.hse.ru/org/hse/rlms). The RLMS is an ongoing nationally representative household survey of the Russian population that began in 1992. The study is conducted by the Higher School

of Economics and ZAO "Demoscope" together with the Carolina Population Center at the University of North Carolina at Chapel Hill and the Institute of Sociology RAS. We use Round 9 of the RLMS, which was collected in 2000, because it asks questions on physical limitations comparable to the U.S. data. The analysis of RLMS data is restricted to ages 55–84 because the relevant disability measures were not collected for those younger than age 55. We also restrict the data to individuals born in Russia. The number of cases with missing data for covariates in the RLMS is small (~1%). Our analytic sample consists of 1,346 respondents ages 55–84.

Physical Limitation Measures

In the census, the presence of functional limitations is assessed by a single question: "Does this person have any of the following long-lasting conditions: A condition that substantially limits one or more basic physical activities such as walking, climbing stairs, reaching, lifting, or carrying?" The question pertaining to ADL limitations is, "Because of a physical, mental, or emotional condition lasting 6 months, or more, does this person have any difficulty in doing any of the following activities: Dressing, bathing, or getting around inside the home?" The specific tasks from both questions are based on a subset of items from well-established scales of physical functioning (Nagi 1991) and personal care tasks (Katz et al. 1963). Response choices for both questions are yes/no, from which we construct two dependent variables coded as 1 for yes responses and 0 otherwise. Although the census includes additional questions on mobility disability, the validity of these items has been challenged (Stern 2003).

We construct a comparable measure of functional limitations in the NHIS from the following individual items: difficulty in walking (one-quarter mile), climbing stairs (10 steps without resting), reaching, and carrying (10 pounds). The NHIS offers five response categories: "not difficult at all," "only a little difficult," "somewhat difficult," "very difficult," or "can't do at all." We define a functional limitation in the NHIS based on two responses, "very difficult" or "can't do at all," on at least one item.[1] For ADL limitations, the question in the NHIS is similar to that in the census: "Because of a physical, mental, or emotional problem, [does the respondent] need the help of other persons with personal care needs, such as eating, bathing, dressing, or getting around inside the house?" Respondents are given a yes/no response choice.

In the RLMS, we combine individual items asking about difficulty walking (across a room), climbing one flight of stairs (without resting), and carrying (5 kg). Five graded response choices are provided, ranging from "not at all difficult" to "cannot do it." We use the same coding strategy as in the NHIS and code functional limitations as 1 for the following two responses: "very difficult, but possible" and "cannot do it."

[1] Our strategy for coding functional limitations in the NHIS was to produce a comparable measure of disability to that in the census. In preliminary analysis, we explored various criteria for defining functional limitations in the NHIS. For example, we initially used a broad definition that included any level of difficulty (i.e., "only a little difficult" and higher). This resulted in a prevalence of functional limitations in the NHIS that was about twice that observed in the census for both FSU immigrants and U.S.-born non-Hispanic whites. Given that the census question includes "substantially limits" in its phrasing, we inferred that those with milder forms of functional limitations were answering "no." Hence, it is plausible that the census captures only more severe forms of functional limitations. By using the more restrictive criteria in the NHIS, we obtain a comparable prevalence of functional limitations across the two data sets for both groups. Regardless, the results presented are robust to the NHIS coding strategy.

ADL limitations in the RLMS are coded 1 for individuals reporting difficulty dressing, showering, bathing, or using the toilet.

Explanatory Variables

FSU Immigrants

FSU immigrants are defined as individuals born in any of the former Soviet republics.[2] We disaggregate FSU immigrants into two arrival periods reflecting the two major waves of immigration to the United States: Wave 1 (1970–1986) and Wave 2 (1987–2000). In the PUMS, year of arrival in the United States is based on a response to the question, "When did [respondent] come to live in the United States?" Therefore, year of arrival does not necessarily reflect the year that U.S. permanent residency was granted (Redstone and Massey 2004). The age distribution of the two arrival cohorts is very similar. We further designate two arrival-age categories (<50 years, ≥50 years). We explored preliminary models dividing FSU immigrants by an arrival age of 65, which has been the traditional U.S. retirement age. These models produced similar results to those presented and are not shown.

Sociodemographic Factors

We measure age in single years and include a squared term to capture nonlinearities in its effect. Educational attainment is classified as: less than high school diploma, high school diploma/General Educational Development (GED), college graduate). In sensitivity models, we include an income-to-poverty ratio based on family-level income. We do not include this variable in primary models because it can be endogenous to health (Smith 1999). Other sociodemographic controls include marital status (married, never married, separated/divorced/widowed) and U.S. region of residence (Northeast, South, Midwest, and West).

Health Behaviors

Information on health behaviors, such as smoking and alcohol use, is available in the NHIS. We code smoking behaviors as never, former, or current smoker. Alcohol use is classified based on published guidelines based on weekly alcohol consumption (Schoenborn and Adams 2002): lifetime abstainer, former drinker (no drinks in the prior year), current light drinker (<4 drinks per week), and current moderate/heavy drinker (≥4 drinks per week). We do not separate heavy drinkers (≥21 drinks per week) from moderate drinkers (4 to 21 drinks per week) because only two FSU immigrants were heavy drinkers. While alcohol "binging" (5+ drinks per occasion) has received considerable attention in the Soviet republics, the prevalence of binging at least one time in the prior year was uncommon among FSU immigrants (<5%). We also include an adjustment for self-reported BMI (kg/m^2): normal (BMI 18.5–24.9), overweight (25.0–29.9), and obese (≥30.0). We drop

[2] The former Soviet republics include Russia, Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Krgyzstan, Latvia, Lithuania, Moldova, Ukraine, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.

underweight (<18.5) observations because of the small number of immigrants in this category (2 observations).

Analytical Approach

We present the following comparisons: (1) FSU immigrants versus U.S.-born non-Hispanic whites, (2) FSU immigrants by period of and age at U.S. arrival, and (3) Russian-born U.S. immigrants versus Russian-born residents of Russia. We estimate multivariate logistic regression models. Sex-stratified results are presented based on the PUMS because preliminary analyses revealed a significant interaction between sex and place of birth (FSU immigrants vs. U.S.-born non-Hispanic whites). We combine both sexes and adjust for sex in the analyses based on the NHIS because of the limited sample size. Comparisons of Russian-born U.S. immigrants and Russian-born residents in Russia are also sex stratified because of the higher prevalence of disability among men than women in Russia. Sample weights are used in all analyses. The 2000–2007 NHIS surveys cover two design periods with different sampling frames, and we adjust the sampling weights and primary sampling unit (PSU)/strata variables according to recommended guidelines (Minnesota Population Center 2008b). All models are estimated in STATA 10 (Stata Corporation 2007). Henceforth, we refer to U.S.-born non-Hispanic whites as U.S.-born whites.

Results

Descriptive Characteristics

Table 1 presents descriptive characteristics in the PUMS and NHIS. We first describe results from the PUMS. Compared with U.S.-born whites, FSU immigrants report significantly higher levels of functional (26% vs. 18%) and ADL (13% vs. 4%) limitations despite a similar mean age of about 63 years. Females make up approximately 56% of the FSU sample and 53% of the U.S.-born sample. The FSU group is more likely to hold a college degree compared with U.S.-born whites (55% vs. 28%). Two-thirds of individuals in each group are married. A much higher proportion of FSU immigrants than U.S.-born whites are concentrated in the U.S. Northeast (52% vs. 20%).

Table 1 shows the timing and age of immigration for FSU immigrants in the PUMS. With respect to period of immigration, about 23% immigrated during Wave 1 (1970–1986), and 77% immigrated during Wave 2 (1987–2000). The majority (62%) entered the United States at age 50 or older. Nearly 75% of the FSU immigrants were born in either Russia (37%) or the Ukraine (37%) (results not shown).

We obtain similar results from the NHIS, increasing our confidence that these differences in disability are real. Similar to the PUMS, FSU immigrants are significantly more likely to report functional (26% vs. 17%) and ADL (10% vs. 2%) limitations than U.S.-born whites. Both data sources are also similar in the distribution of sociodemographic characteristics. However, unlike the PUMS, the NHIS also

Table 1 Descriptive characteristics of FSU immigrants and U.S.-born non-Hispanic whites in the PUMS and NHIS, ages 50–84

	2000 PUMS			NHIS, 2000–2007		
Characteristic	FSU Immigrants	U.S.-born Whites	*p* Value	FSU Immigrants	U.S.-born Whites	*p* Value
Physical Limitations						
Functional limitation	26.4	17.8	<.001	25.5	16.5	.007
ADL limitation	13.2	4.3	<.001	9.7	2.3	.003
Sociodemographics						
Age (mean)	63.3	63.4	.13	65.0	63.2	.02
Female	56.0	52.9	<.001	53.5	51.7	.69
Education						
Less than high school diploma	19.4	18.1	.01	14.0	14.9	.75
High school diploma/ GED	25.3	53.8	<.001	26.7	50.1	<.001
College degree+	55.4	28.1	<.001	59.3	34.5	<.001
Marital status						
Married	69.6	68.4	.03	69.5	68.7	.818
Never married	2.1	4.4	<.001	30.5	31.3	.818
Separated/divorced/ widowed	28.3	27.2	.02	—	—	—
U.S. region of residence						
Northeast	51.6	20.0	<.001	40.5	19.3	<.001
South	8.6	35.4	<.001	9.1	35.6	<.001
Midwest	13.4	26.1	<.001	27.8	27.4	.913
West	26.4	18.6	<.001	22.5	17.6	.246
Timing of Immigration						
Period of U.S. arrival						
Wave 1 (1970–1986)	23.1	—	—	—	—	—
Wave 2 (1987–2000)	76.9	—	—	—	—	—
Age of U.S. arrival						
Arrival <50 years	38.4	—	—	—	—	—
Arrival ≥50 years	61.6	—	—	—	—	—
Behaviors and BMI						
Smoking status						
Never	—	—	—	72.0	45.7	<.001
Former	—	—	—	18.3	37.7	<.001
Current				9.6	16.6	<.001
Alcohol consumption						
Lifetime abstainer	—	—	—	38.2	20.8	<.001
Former drinker	—	—	—	11.8	21.5	<.001
Current light drinker (<4 drinks per week	—	—	—	40.9	38.3	.518
Current moderate/heavy drinker (≥ 4 drinks per week)	—	—	—	9.1	19.5	<.001

Table 1 (continued)

Characteristic	2000 PUMS			NHIS, 2000–2007		
	FSU Immigrants	U.S.-born Whites	*p* Value	FSU Immigrants	U.S.-born Whites	*p* Value
BMI						
Normal (BMI 18.5–24.9)	—	—	—	24.7	33.7	.003
Overweight (BMI 25.0–29.9)	—	—	—	50.2	39.5	.004
Obese (BMI ≥30.0)	—	—	—	25.1	26.8	.614

Notes: Percentages unless otherwise noted. Dashed lines indicate data are not applicable or not available. Sample sizes are as follows: 2,599,559 (PUMS) and 57,626 (NHIS) for U.S.-born non-Hispanic whites; 9,312 (PUMS) and 219 (NHIS) for FSU immigrants. Data are weighted except for sample sizes.

Sources: U.S. Census of Population 2000 5% PUMS and National Health Interview Survey, 2000–2007.

provides information on health behaviors. FSU immigrants are more likely to be never smokers than U.S.-born whites (72% vs. 46%). They are also more likely to be lifelong alcohol abstainers (38% vs. 21%). Obesity (BMI ≥30.0) levels, however, are comparable in the two groups (25% and 27%, respectively).

Comparison of Disability Between FSU Immigrants and U.S.-born Whites

Table 2 shows results from sex-stratified logistic regression models comparing functional and ADL limitations among FSU immigrants and U.S.-born whites (reference group) based on the PUMS. In Model 1, we adjust only for age and age squared. Model 2 also controls for education, marital status, and U.S. census region of residence. Overall, FSU immigrant men and women report significantly higher levels of functional and ADL limitations compared with U.S.-born whites. This finding holds whether we control only for age (Model 1) or for all explanatory factors

Table 2 Odds ratios (95% CI) from logistic regression models predicting functional and ADL limitations for FSU immigrants and U.S.-born non-Hispanic whites by sex in the PUMS, ages 50–84: 2000

Models	Functional Limitations		ADL Limitations	
Males				
Model 1 (age, age squared)	1.50***	(1.39, 1.62)	3.30***	(2.97, 3.66)
Model 2 (fully adjusted)	1.94***	(1.79, 2.11)	4.19***	(3.76, 4.67)
Females				
Model 1 (age, age squared)	1.89***	(1.78, 2.02)	3.79***	(3.50, 4.11)
Model 2 (fully adjusted)	2.34***	(2.19, 2.51)	4.57***	(4.20, 4.97)

Notes: Reference category is U.S.-born non-Hispanic whites. Sample sizes are as follows: 4,106 (males) and 5,206 (females) for FSU immigrants; 1,225,891 (males) and 1,373,668 (females) for U.S.-born non-Hispanic whites. Data are weighted. Model 1: age and age squared. Model 2: Model 1 + education, marital status, and U.S. region of residence.

Source: U.S. Census of Population 2000 5% PUMS.

***$p < .001$

(Model 2). The introduction of sociodemographic controls results in an increase in the odds ratio for both men and women (Model 2 vs. Model 1). These increases are largely driven by the inclusion of education, a result that is in the expected direction given the higher level of education among FSU immigrants compared with U.S.-born whites. In the fully adjusted Model 2, the FSU immigrant men are almost twice as likely to report a functional limitation and are more than four times as likely to report ADL limitations as U.S.-born white men. The FSU immigrant women are more than twice as likely to report a functional limitation as U.S.-born white women, and they are more than 4.5 times as likely to report ADL limitations.

Table 3 shows results from logistic regression models predicting functional and ADL limitations in the NHIS. As noted earlier, the smaller sample size in the NHIS precludes the estimation of separate models for men and women. The results are, however, consistent with the findings based on the PUMS. FSU immigrants report significantly higher levels of functional and ADL limitations compared with U.S.-born whites (reference group), and the inclusion of sociodemographic characteristics results in an increase in the odds ratios primarily because of the inclusion of education. The additional adjustment for health behaviors and BMI (Model 3) does little to change the estimated odds ratios. Thus, the significantly higher level of functional and ADL limitations of the FSU immigrants compared with U.S.-born whites cannot be explained by differences in sociodemographic characteristics, smoking, alcohol use, and BMI.

Adjustment for Income-to-Poverty Ratio

Despite the high proportion of college graduates among the FSU group, their family poverty level is more than four times that of U.S.-born whites (26% vs. 6% in the PUMS, with similar differences found in the NHIS; results not shown). FSU immigrants are also nearly twice as likely to be in families that are in near poverty (101%–200% of the poverty line) compared with U.S.-born whites. Income is thought to have independent associations with health over and above that of education (Bond Huie et al. 2003; Braveman et al. 2005), and it is possible that differences in family income partly explain differences in disability between the FSU group and U.S.-born whites.

Table 3 Odds ratios (95% CI) from logistic regression models predicting functional and ADL limitations for FSU immigrants and U.S.-born non-Hispanic whites in the NHIS, ages 50–84: 2000–2007

Models	Functional Limitations		ADL Limitations	
Model 1 (age, age squared, sex)	1.62**	(1.15, 2.26)	4.13**	(2.41, 7.08)
Model 2 (+ sociodemographics)	2.15***	(1.50, 3.07)	4.79***	(2.77, 8.25)
Model 3 (+ behaviors, BMI)	2.15***	(1.51, 3.04)	4.63***	(2.77, 7.76)

Notes: Reference category is U.S.-born non-Hispanic whites. Sample sizes are 219 for FSU immigrants and 57,626 for U.S.-born non-Hispanic whites. Data are weighted. Model 1: age, age squared, and sex. Model 2: Model 1 + education, marital status, and U.S. region of residence. Model 3: Model 2 + smoking status, alcohol use, and BMI categories.

Source: National Health Interview Survey, 2000–2007.

**$p < .01$; ***$p < .001$

Unlike education, however, which is usually established relatively early in life, income fluctuates and is sensitive to changes in health among adults (Smith 1999). Thus, we did not include income in our primary models because we cannot fully disentangle the multidirectional association between income and disability. Additional analyses, adjusting for family-level income-to-poverty ratio in the NHIS, led to an approximate 21% reduction in the odds ratios of the fully adjusted models shown in Table 3 (both disability measures); but the substantive conclusions indicating substantially higher disability among the FSU immigrants than U.S.-born whites remained unaltered, suggesting that differing poverty levels between the two groups do not explain differences in disability (results available on request). We did not perform these sensitivity analyses for the PUMS because the percentage of imputed family income data was large and approached 40%.

Disability Among FSU Immigrants by Period of and Age at Arrival

We next turn to investigating subgroup variation *among* FSU immigrants. The results shown in Table 4 reveal that the Wave 1 (1970–1986) cohort reports significantly lower levels of functional and ADL limitations compared with the Wave 2 (1987–2000) cohort (Model 1). An increased duration of U.S. residence for FSU immigrants is thus associated with *better* health outcomes, a result that is contrary to findings for

Table 4 Odds ratios (95% CI) from logistic regression models predicting functional and ADL limitations for FSU immigrants by period of and age at U.S. arrival in the PUMS, ages 50–84: 2000

Models	Functional Limitations		ADL Limitations	
Model 1:				
Period of U.S. Arrival				
1970–1986	0.64***	(0.56, 0.73)	0.61***	(0.51, 0.73)
1987–2000 (ref.)	—		—	
Model 2:				
Age of U.S. Arrival				
<50 years	0.53***	(0.44, 0.62)	0.49***	(0.39, 0.63)
≥50 years (ref.)	—		—	
Model 3:				
Period and Age of Entry				
1970–1986				
<50 years	0.47***	(0.39, 0.56)	0.43***	(0.32, 0.57)
≥50 years	0.88	(0.72, 1.07)	0.77*	(0.60, 0.98)
1987–2000				
<50 years	0.70**	(0.54, 0.90)	0.67*	(0.46, 0.97)
≥50 years (ref.)	—		—	

Notes: Models are limited to FSU immigrants only. All models adjust for age, age squared, sex, education, marital status, and U.S. region of residence. Sample size is 9,312. Data are weighted.

Source: U.S. Census of Population 2000 5% PUMS.

*$p < .05$; **$p < .01$; ***$p < .001$

other U.S. immigrant groups (Cho et al. 2004; Elo et al. 2011). Table 4 (Model 2) also shows that a younger age at immigration (<50 years) is associated with lower functional and ADL limitations than an older age at immigration (≥50 years). For example, the odds of reporting functional or ADL limitations by those who migrated before age 50 are only about one-half that of older-aged arrivals, a difference that is highly significant.

The effects of arrival period and arrival age can confound each other, and in Model 3 (Table 4), we combine both variables using a set of dummy variables identifying each unique arrival period/age combination (Mutchler et al. 2007). Model 3 (Table 4) further shows that both period of and age at immigration are associated with the disability outcomes. Arrival at a younger age (<50 years) predicts lower levels of functional and ADL limitations than arrival at an older age (≥50), regardless of the period of arrival ($p < .05$ for all comparisons). At the same time, those who immigrated in 1970–1986 reported lower levels of functional and ADL limitations than those who arrived in 1987–2000, although not all comparisons reached statistical significance.

Comparison of Disability Between Russians and Russian-born U.S. Immigrants

One of the key questions, although seldom examined, in the study of immigrant health is how immigrants compare with the population in their country of origin. In the final set of analysis, we compared the age-adjusted prevalence of functional and ADL limitations among Russian-born U.S. immigrants with that of Russians in Russia based on the PUMS (Table 5). We stratify the Russian-born U.S. immigrants by arrival period (1970–1986, 1987–2000).

Table 5 Age-standardized percentages (95% CI) reporting a functional or ADL limitation for Russian-born U.S. immigrants and Russian-born residents of Russia by sex in the PUMS and RLMS, ages 55–84: 2000

Population	Functional Limitations		ADL Limitations	
Males				
Russian Population ($N = 444$)	28.0	(24.0, 32.0)	19.5	(16.0, 23.1)
U.S. Immigrants				
1970–1986 ($N = 307$)	22.8	(17.8, 27.8)	7.6***	(4.2, 11.0)
1987–2000 ($N = 762$)	24.3	(21.1, 27.5)	14.3*	(11.7, 16.9)
Females				
Russian Population ($N = 896$)	47.7	(44.6, 50.8)	36.4	(33.5, 39.4)
U.S. Immigrants				
1970–1986 ($N = 395$)	25.3***	(20.8, 29.8)	10.7***	(7.4, 13.9)
1987–2000 ($N = 1,181$)	34.1***	(31.3, 37.0)	16.4***	(14.2, 18.7)

Notes: The Russian population is restricted to those born in Russia. Significance levels refer to the difference between respective U.S. immigrant wave and Russian population. The standard population is the sex-specific mean of the age schedules (55–69, 70–84) of the three populations. Data are weighted except for sample sizes.

Sources: U.S. Census of Population 2000 5% PUMS and RLMS Round 9, 2000.

***$p < .001$

Among men, all immigrants report significantly lower levels of ADL limitations compared with men living in Russia, regardless of the time of arrival (Table 5). The age-adjusted percentage of ADL limitations for men in Russia is about 20% versus 8% and 14% among Wave 1 and Wave 2 U.S. immigrants, respectively. In contrast, the age-adjusted percentage of functional limitations did not differ significantly between male immigrants to the United States and Russian men (28% for Russians, 23% for Wave 1 immigrants, and 24% for Wave 2 immigrants). Among women, both immigrant cohorts report significantly lower levels of functional and ADL limitations. The age-adjusted percentage of functional limitations of Russian women is 48% compared with 25% and 34% for Wave 1 and Wave 2 immigrant women, respectively. Similarly, the age-adjusted percentage of ADL limitations among women in Russia is 36% compared with 11% and 16% among Wave 1 and Wave 2 immigrant women, respectively. Because ideally one would want to measure health at the time of migration, we performed an additional sensitivity analysis restricting the Russian-born U.S. immigrants to those who arrived in 1995–2000. Results for this most recent group are very similar to the entire 1987–2000 wave (results not shown). Taken together, the results from Table 5 lend support to the "healthy migrant" hypothesis.

Discussion

Although there is renewed interest in the health of foreign-born Americans, FSU immigrants remain an understudied group despite the large number who migrated to the United States and the interest in the health consequences of the collapse of the Soviet Union. Our findings indicate that compared with U.S.-born whites, FSU immigrants reported higher levels of functional and ADL limitations (ages 50–84). This pattern is evident for both sexes and is independent of SES, health behaviors, and other sociodemographic factors. Thus, while other studies highlight better health among U.S. foreign-born subgroups than among the native-born, our findings indicate an opposite pattern for FSU immigrants, at least with respect to reported disability. We also find evidence indicating that those who arrived during a period when Soviet exit visas were difficult to obtain (1970–1986) are healthier than those who migrated when state restrictions on migrating were weak (1987–2000). Furthermore, those who migrated earlier in life (<50 years) are healthier than those who migrated later in life (≥50 years). Finally, we provide a direct test of the "healthy migrant" hypothesis by comparing disability levels between Russian-born U.S. immigrants and Russian-born individuals residing in Russia (ages 55–84). We find that Russian-born U.S. immigrants display significantly lower levels of functional limitations (for females) and ADL limitations (for both sexes) than their Russian-born counterparts in Russia. Therefore, despite the poor outcomes of FSU immigrants relative to U.S.-born whites, subgroups of this population appear to be positively selected for health.

Explaining Differences Between FSU Immigrants and U.S.-born Whites

We found that middle-aged and older aged FSU immigrants are about twice as likely to hold a college degree compared with their U.S.-born white counterparts, but report

higher levels of disability with and without controlling for education and other socio-demographic characteristics. This finding warrants further consideration because it suggests an "epidemiological paradox" in that FSU immigrants display poor health despite their high educational levels. This paradox is distinct from the "Hispanic paradox"—the better-than-expected health outcomes among Hispanics given their low SES (Franzini et al. 2001; Palloni and Arias 2004; Markides and Eschbach 2005).

Notably, we found that FSU immigrants are substantially more likely to reside in families that are below or close to the poverty line despite their high levels of education. FSU immigrants, like other immigrants, may have lower income returns to education than the U.S.-born because they are not able to fully transfer their skills to the U.S. labor market (Akresh 2006; Friedberg 2000; Remennick 2007:202–203). The higher levels of poverty among FSU immigrants may also be due to their higher levels of disability (reverse causality). Nonetheless, we show that the high levels of family-level poverty among FSU immigrants do not explain differences in disability between FSU immigrants and U.S.-born whites.

Given the high prevalence of smoking and heavy alcohol use evident in the FSU republics, we also examined whether health behaviors play an important role. Contrary to expectation, we found that FSU immigrants displayed lower levels of smoking and alcohol consumption than U.S.-born whites. Obesity levels were comparable across the groups. Risky health behaviors, therefore, also did not explain the higher levels of disability among FSU immigrants compared with U.S.-born whites. The low levels of risky health behaviors among FSU immigrants could be attributed to the large proportion of Jews in the FSU immigrant population. We believe that approximately 70% of the FSU sample is Jewish.[3] Data on health behaviors among Jews in the FSU are not readily available, but Jews in Russia have lower mortality from alcohol-related causes, smoking-related cancers, and violence compared with non-Jews, indicating a more favorable behavioral profile compared with other FSU groups (Shkolnikov et al. 2004). These findings are perhaps rooted in cultural or community norms discouraging risk-taking behaviors that have been retained by Jewish FSU immigrants in the United States. Because our data do not contain information on religion, we were unable to investigate differences by religion among FSU immigrants.

Our findings raise a set of puzzling questions as to the cause of high disability among FSU immigrants compared with U.S.-born whites, warranting further research on this population. One possible explanation may lie with early life conditions. The high disability among FSU immigrants could be partly rooted in poor childhood nutrition and exposure to high levels of infectious diseases, which may have long-lasting negative health consequences. Another set of factors may lie with the social and psychological stresses associated with the shocks of Soviet economic collapse

[3] A source for estimating the number of FSU-born Jews in the United States is the National Jewish Population Survey (NJPS) conducted in 2000–2001. Based on this population-based survey of adult Jews ages 18 and older, it is estimated that approximately 261,000 Jews immigrated to the United States since 1970. In the PUMS, there were an estimated 636,000 adults ages 18 and older in this category. Therefore, a rough estimate would be that 40% of FSU immigrant adults in 2000 are Jewish and immigrated in 1970 or later. Among older adults, the proportion of Jews is likely higher. In the NJPS, there were an estimated 107,000 Jews who were ages 55 and older and immigrated in 1980 or later (Ament 2004). In the PUMS, approximately 148,000 FSU immigrants fell into this category. This comparison suggests that approximately 70% of our sample is Jewish.

and differences in the utilization of health care in comparison with U.S.-born whites (Ivanov and Buck 2002). Future research on FSU immigrants would benefit from studies that include additional health outcomes, including clinically based measures, and measures of childhood circumstances.

It is also important to highlight that this analysis relies on self-reports of disability. Previous studies have found that self-reported functional and ADL limitations predict clinically based measures of physical health and future mortality across diverse groups (Idler and Benyamini 1997; Idler et al. 2000; Kroenke et al. 2008; Lee 2000; McGee et al. 1999; Scott et al. 1997; Wang and Satariano 2007). However, some advocate caution in interpreting differences in self-reported data *across* cultures or nationalities (Carr et al. 2001; Mathers 2003; Murray and Chen 1992; Sen 2002). We are not aware of any study that has investigated the validity of self-reported health data among FSU immigrants, but differences in reporting styles may be an important contributing explanation for our findings.

Heterogeneity in Disability Levels Among FSU Immigrants

Our results indicate that those who arrived earlier (1970–1986) appear healthier than those who arrived later (1987–2000). Previous studies for other U.S. immigrant groups indicate that a longer length of U.S. residence is associated with poorer health (Amaro et al. 1990; Angel et al. 2001; Hummer et al. 1999b). Therefore, the association between duration of U.S. residence and health among FSU immigrants is different than that among other foreign-born groups. We speculate that the earlier FSU immigrant wave was a more highly select group than the later wave because of the numerous obstacles that had to be overcome to obtain a Soviet exit visa during the early period. In addition, there were changes in U.S. policy toward admitting FSU immigrants between the two waves that also conceivably altered the level of selectivity. During the later wave, FSU immigrants with familial or other ties to the United States received preference in obtaining a visa. Selection could be weaker among individuals with established family networks (vs. no family) in the destination country because established families offset some of the financial, emotional, and social risks associated with migration. Previous findings indicate that immigrants arriving under family sponsorship are less selected on health than other migrants (Akresh and Frank 2008). Familial ties could also induce negative selection if families sponsor sick relatives to provide them with access to better health care and familial support. The proportion of Jews across the waves may also differ contributing to the observed differences, although data to examine this issue are not readily available.

Because of the cross-sectional nature of our data, we cannot disentangle differences in selectivity by arrival period with differences in exposure to the U.S. environment. Explanations on the negative health effects of U.S. exposure focus on the role of acculturation, whereby initial foreign-born health advantages are diminished as immigrants adopt unhealthy behaviors and become increasingly dislocated from social and familial networks. If U.S. exposure is also negatively associated with health among FSU immigrants, then our findings understate the health advantage of the first wave (1970–1986) relative to the second wave (1987–2000). However, unlike other immigrants, FSU immigrants arrive from a region with very high levels

of smoking and alcohol consumption, and thus exposure to the U.S. environment may bring about positive changes in health behaviors.

One characteristic of the foreign-born not generally accounted for in prior studies is the age at migration. We find that migrants who arrived in late life (≥50 years) reported higher levels of disability than migrants who arrived in early life (<50 years). This finding supports prior speculations that late-life migrants are less positively selected for health than early-life migrants (Elo et al. 2011; Jasso et al. 2004). Late-life migrants are potentially more likely to have existing familial networks in the United States than working-aged migrants. Rather than having to obtain employment, for example, late-life migrants could benefit from the financial and emotional support provided by children and other relatives, which could lower barriers to migration. It is also conceivable that older migrants are seeking better health care, and this could induce a *negative* selection (Jasso et al. 2004).

Health Selection Among Russian-born U.S. Immigrants

Although data on the health of Russian-born U.S. immigrants at the time of migration would be ideal to test the strength of health selection, our results support the notion that Russian immigrants are positively selected for health, which lends support to the "healthy migrant" hypothesis. The fact that a large proportion of the FSU immigrant sample is Jewish may help explain this positive health selection because it appears that Jews in Russia are healthier than the population as a whole. Data on health among Jews in Russia are limited, but available evidence on mortality suggests that Jewish men and women in Moscow are healthier than ethnic Russians and did not experience increasing mortality during the period surrounding the collapse of the Soviet Union (Shkolnikov et al. 2004). It is conceivable that there was also differential selectivity across receiving countries. As indicated, FSU migrants who went through the "transit" centers in Europe often had a choice of destination countries, likely leading to self-selective sorting (Cohen and Haberfeld 2007). Although we are not aware of any information about differential health selectivity by receiving area, FSU migrants who chose the United States had substantially higher levels of education compared with those who migrated to Israel, suggesting a higher level of positive selectivity on SES and perhaps on better health among the U.S. migrants (Cohen and Haberfeld 2007). It is conceivable that less-healthy migrants chose to avoid a longer journey to the United States and preferred Israel because of its more comprehensive government-funded services.

Limitations

This study has limitations not already discussed. The PUMS contains a certain number of responses that are proxy reported. However, we find it unlikely that proxy responses introduce substantial bias because of the consistency in results between the PUMS and the NHIS, which contains entirely self-reported data. Furthermore, the items on physical limitations across the three surveys were not identical; they differed in the specific tasks elicited and response options. This limits conclusions based on comparisons between Russian U.S. immigrants and Russians. However, we believe that the biases are not large because the prevalence estimates in the PUMS are similar

to those in the NHIS, in which questions and response categories are similar to those in the RLMS. We also could not examine whether immigrants arriving under different visas had different health profiles or how difficulty in obtaining permanent residency status in the United States is associated with health, although these factors may be relevant to health heterogeneity among the foreign-born (Akresh and Frank 2008). Finally, we cannot assess the potential effect of return or circular migration (Redstone and Massey 2004). Return migration to the former Soviet republics is probably not large given the political and economic transformations that these regions experienced and the likelihood that entire families and communities left during the mass emigration. For Jews, selective migration to Israel after migrating to the United States is also a possibility.

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