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DISABILITY AND HEALTH OUTCOMES OF EASTERN EUROPEAN IMMIGRANTS
TO THE UNITED STATES

by

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ABSTRACT

Eastern European immigrants are one of the largest groups of immigrants in the United States. However, little is known about their health outcomes after arrival to the US. This study addresses the importance of differentiating Eastern European immigrants as a distinct category of immigrants with health outcomes that may differ from those born in the US, or other immigrants. This study examined the health of Eastern European immigrants in the United States, by focusing on three measures of disability – ambulatory, independent living, and self-care difficulties – and comparing them to US-born Whites and to other immigrants. The study uses the 2018 wave of the American Community Survey (ACS) Public Use Microdata Sample (PUMS) of adults over the age of 40 ($N = 1,440,928$), to evaluate the odds of disability as a function of birthplace and race/ethnicity. The results of the study show that Eastern European (EE) immigrants have significantly higher odds of independent living difficulties and self-care difficulties when compared to their US-born peers, but there is no difference between the odds of ambulatory difficulties in EE immigrants compared to White US-born individuals. The differences were not explained by demographic variables, education, year of immigration or socioeconomic & work status of the EE immigrants. The findings of the study suggest that more attention needs to be given to the health outcomes of White immigrants to the United States, since there could be significant health disparities occurring within various White ethnic groups.

Keywords: Eastern European immigrants, United States, disability, health outcomes, birth place, race/ethnicity, Healthy Immigrant Effect

The health literature on immigrants is vast, particularly focusing on the healthy immigrant effect and the changes in health outcomes immigrants experience after arrival in the host country. The healthy immigrant effect refers to the health advantage that immigrants have upon arrival in the country of destination over the native population (Markides & Rote, 2019; McDonald & Kennedy, 2004). Recent immigrants tend to have less chronic conditions or disabilities due to health screening processes that prohibit entry to those with serious medical conditions (Markides & Rote, 2019; Newbold, 2005). Kennedy et al. (2014) argue that not only that immigrants undergo a selection process before arrival, they also undergo a self-selection, through which only the healthiest and wealthiest individuals decide to migrate, hence increasing their chances of migrating to a new destination country.

Researchers suggest that the region of origin of immigrants is an important determinant of health that shapes the differences in the health outcomes of immigrants (McDonald & Kennedy, 2004). Previous literature in the field explores that immigrants come from an environment that has certain health risks, to one that includes different health risks, that can have an even more detrimental effect on their health (Newbold, 2005). Mackenbach (2014) argues that collective health behaviors are influenced by culture and that various European countries have significant differences in terms of health outcomes. The most noticeable divide in terms of health outcomes occurs between Western and Eastern Europe (Mackenbach, 2014). The research conducted on the health outcomes of immigrants based on region of origin has primarily focused on smoking and obesity, and health outcomes as a result of access to health care, since these measures are easier to quantify (Vang, Sigouin, Flenon and Ganon, 2017). Research shows that immigrants' health declines after an uptake of unhealthy lifestyles (poor diets, smoking, excessive drinking) after arrival in the host

country (Newbold, 2005). Yet, the prevalence of smoking and alcohol consumption is very high in Eastern Europe (Stefler et al., 2018), which could explain the poorer health outcomes in Eastern Europeans compared to immigrants from other regions of origin. Health literature also shows that little research has been done on health outcomes of immigrants by looking at the activities of daily living, particularly since these tend to decline in mid- to later adulthood (Gee, Kobayashi and Prus, 2004). Activities of daily living can provide a clearer insight in the health outcomes of immigrants and offer a more rounded understanding of the needs of immigrants to the US. Lastly, since Mackenbach's (2014) research argues that there are significant differences in the health outcomes Eastern Europeans and other White immigrants, it is important to separate immigrants based on their countries/region of origin when researching their health outcomes in American context.

The fall of communist regimes in the Eastern Europe, including the fall of Soviet Union, have stimulated an influx of Eastern European immigrants to the United States. Although the Eastern European diaspora in the United States has grown significantly since the early 1990s, little is known about the socio-economic, cultural, political and health adaptations of these immigrants to the US (Michalikova & Yang, 2016; Read, West & Kamis, 2020; Robila, 2008). Previous studies on immigrants to the United States have merged Eastern European immigrants into the same category as immigrants from other European countries, UK, Australia, New Zealand, and Middle East, due to small sample sizes and erroneous assumptions that they have similar human capital. Reports show that out of the 4.8 million first generation European immigrants to the US, more than 2.1 million (or 44 percent) arrived from Eastern Europe (Michalikova, 2017). By merging EE immigrants to other immigrants, studies have not considered the historical, social and economic background of immigrants

that arrive from this region, that impacts their adaptation and integration in the host country (Robila, 2008).

Eastern European immigrants have set themselves apart from other White immigrants to the US due to their high amounts of human capital. EE immigrants have on average higher levels of high school and college diplomas, compared to US born individuals and other immigrants (Robila, 2008). Although they have high levels of educational attainments, there still is a large disparity between their high human capital and income in their home countries, and after arrival and settlement in the US. Studies have shown that Eastern European immigrants earn about 60 percent less than other European immigrants to the US with similar levels of educational attainment (Michalikova, 2017). As a group, Eastern European immigrants have not experienced universal upward mobility upon arrival to the US. Recent Jewish immigrants from Eastern Europe have acquired white-collar, managerial and professional jobs, while Polish immigrants in the late 1980s and early 1990s have experienced a decline in their occupational status, income and were unable to find employment similar to the one they held in Poland or that matched their educational attainments (Michalikova, 2017).

This study aims to add to the existing literature on the integration of Eastern European immigrants in the United States, by focusing on their disability rates compared to US born individuals. The primary objective of this study is to determine if the disability of Eastern European immigrants to the US is consistent with the framework of the “healthy immigrant effect”. This study discusses disability as a product of three measures, as it attempts to answer the following research questions: 1) How do the ambulatory difficulties of Eastern European immigrants compare to those of White US born individuals? 2) How do the

independent living difficulties of Eastern European immigrants compare to those of White US born individuals? 3) How do the self-care difficulties of Eastern European immigrants compare to those of White US born individuals?

1. Methods

1.1. Data

Data for this study come from the 2018 wave of the American Community Survey (ACS) Public Use Microdata Sample (PUMS) (Ruggles et al., 2020). This cross-sectional, nationally-representative data set contains basic demographic measures (age, sex, race, etc.) and economic measures (education, income, occupation, etc.). The data was collected through mail, via telephone for a computer assisted telephone interview, and in person for computer assisted personal interview. The ACS PUMS was chosen for its detailed data on the country of birth, year of immigration and years of residence in the US. The data set contains a large sample of the Eastern European immigrant population, as well as questions on ambulatory difficulties, individual living difficulties and self-care difficulties. The analysis focuses on individuals that reported Eastern Europe as their region of origin. The sample has been restricted to individuals over the age of 40, since disability tends to manifest more prominently in those of middle age (Read, West, Kamal, 2020). The final unweighted sample from the 2018 wave of the American Community Survey PUMS consists of 1,440,928 adults over the age of 40.

1.2. Measures

The American Community Survey asks respondents questions regarding their ambulatory difficulties, independent living difficulties and self-care difficulties. Measures of functional limitations, such as ambulatory difficulties, have been used to estimate physical

disability in the US adult population (Elo, Mehta, Huang, 2011; Read et al., 2020). Disability is the main dependent variable of this study, and the three measures (ambulatory difficulties, independent living difficulties and self-care difficulties) are used to quantify it. Ambulatory difficulty is measured by asking whether or not the respondent has a “condition that substantially limits one or more basic physical activities, such as walking, climbing stairs, reaching, lifting, or carrying”. Independent living difficulties (“Because of a physical, mental, or emotional condition, does this person have difficulty doing errands alone such as visiting a doctor's office or shopping?”), and self-care difficulties (“Does this person have difficulty dressing or bathing?”) have been examined as dependent variables of the study. The responses to these questions have been recoded dichotomously (0=no, 1=yes).

Immigrants from Belarus, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Moldova, Poland, Romania, Russia, Slovakia, Ukraine and former Czechoslovakia were recoded under the ‘Eastern European immigrants’ category. Individuals born in the U.S are used as a reference group, while ‘Other Immigrants’ have been merged into one category. The variable “years in the United States” has been used to show migration pattern of Eastern European immigrants to the US, as well as difference among different immigration cohorts in terms of disability patterns. The question “When did this person come to live in the United States?” was asked to determine how long an individual has been residing in the US. Based on patterns of migration of Eastern European immigrants to the US, as well as US immigration policy changes, years in the US have been grouped and recoded into 5 categories: 1) before 1965; 2) 1965 to 1980; 3) 1981 to 1990; 4) 1991-2000, and 5) after 2001 (Michalikova, 2017; Read et al., 2020)

Sociodemographic characteristics associated with health outcomes have been included as control variables in the study. Educational attainment has been measured as: less than high school, high school diploma/GED, some college/ associate degree, bachelor's degree, beyond bachelor's (Master's, professional or doctorate) degree (reference). Other characteristics are age (in years, grouped as: 40 – 49 years old (reference), 50 – 59 years, 60 – 69 years, 70 – 79 years, 80 years and above; gender (male – reference); marital status (married/common-law – reference, separated/divorced/widowed/never married/single); metropolitan area (urban – reference, rural); employment status (employed – reference, unemployed/not in the labour force); speaks English (speaks English at home– reference, does not speak any English at home); health insurance coverage (has health insurance coverage – reference, no health insurance coverage); and U.S region of residence (Northeast – reference, Midwest, South, West).

1.3. *Statistical methods*

This study uses descriptive statistics, Pearson's chi-square tests, and logistic regressions to estimate levels of disability in Eastern European immigrants to the US. Descriptive statistics and chi-square tests were used to compare US-born, Eastern European immigrants, and other immigrants in terms of age, education levels, income, Census region of residence, employment status, ambulatory difficulty, independent living difficulty and self-care difficulty (Table 1). Table 1 also shows the geographic distribution of Eastern European immigrants to the US, compared to other immigrants. In Table 2, I have stratified the population based on Race/Ethnicity and place of birth to show the patterns of disability across various groups in the US.

Logistic regressions were used to estimate the odds ratios of disability in Eastern European immigrants while including sociodemographic and socioeconomic measures, as well as the year of immigration (Tables 3, 4 and 5). Table 3 presents the odds ratios of ambulatory difficulty in the population. Table 4 presents the odds ratios of independent living difficulty in the population, Table 5 presents the odds ratios of self-care difficulty in the population. Model 1 controls for disability (ambulatory difficulty, independent living difficulties or self-care difficulties) and Race/Ethnicity & birthplace. Model 2, 3 and 4 include measures that immigrants would generally acquire before arrival to the United States. Model 2 includes demographic measures, sex, age group and marital status along with the baseline measures. Model 3 introduces education to the first two models. Model 4 introduces the year of immigration to the United States. Model 5 accounts for socioeconomic and work measures that immigrants would acquire after arrival to the United States (employment status, Census region, income, health insurance, language spoken at home).

2. Results

2.1. Descriptive results

Table 1 shows weighted descriptive statistics stratified by birthplace: US born, Eastern European immigrants and other immigrants. The results show that 57.90% of Eastern European immigrants are female, higher than the number of US born and other immigrants. Overall, the Eastern European population is younger than US born individuals, with higher percentages of those in the 40 – 49 year old age group (29.09% compared to 24.60%). Eastern European immigrants are more highly educated with 23.20% having a Bachelor's degree, and 24.68% having a beyond Bachelor's degree. US born individuals have lower levels of higher education, with 19.29% having a Bachelor's degree, and only 13.51% having

a beyond Bachelor's degree. About 48% of EE immigrants have a total household income higher than \$80,000 USD per year, while only 44% of US-born individuals have a total household income higher than \$80,000 USD per year. The largest cohort of EE immigrants has arrived to the US in the period following the immediate fall of the Soviet Union. From 1991 to 2000, almost 36% of all EE immigrants have arrived and settled in the US, compared to almost 24% of immigrants arriving from other regions. After 2001, there is a decrease in the number of EE immigrants arriving to the US, compared to immigrants arriving from other regions, however, it is the second largest cohort of EE immigrants to the US. Highest number of EE immigrants settle in the Northeast region after arrival to the US (37.5%), while the highest number of other immigrants prefer to settle in the West region of the US (36.8%). EE immigrants have higher employment rates (56.44%), compared to US born (53.32%), and less than other immigrants (60.63%). More Eastern European immigrants speak English at home (96.07%) compared to other immigrants (90.4%). In terms of disability, US born individuals have the highest levels of ambulatory difficulties, however EE immigrants have the highest levels of independent living difficulties and self-care difficulties.

<Insert Table 1 here>

Table 2 shows the weighted descriptive statistics stratified by race/ethnicity and birthplace: White US born, Black US born, Hispanic US born, Other race/ethnicity US born, White Eastern European immigrants, Other White immigrants and Other non-White immigrants. This table shows that in terms of disability, EE immigrants have lower levels of ambulatory difficulties than all US born groups, but higher levels than other White immigrants and other non-White immigrants. When looking at the rates of individual living

difficulties across groups, White EE immigrants are surpassed only by Black US born, while all other groups have lower levels of independent living difficulties. Similar patterns are observed in the case of self-care difficulties, with all groups, except for Black US born individuals, having lower levels of self-care difficulties than EE immigrants.

<Insert Table 2 here>

2.2. Comparison of ambulatory difficulties across groups

Table 3, 4 and 5 present the impact of the race/ethnicity and birthplace on disability, by including covariates. In Table 3, Model 1 adjusts only for race/ethnicity and birthplace. Eastern European immigrants have 6% lower odds of having ambulatory difficulties compared to White US born individuals, however it is not statistically significant. US born individuals in all race/ethnicity categories have higher odds of ambulatory difficulties compared to White US born individuals, with Black US born individuals having about 53% higher odds of ambulatory difficulties. Other White immigrants have 19% lower odds of ambulatory difficulties compared with White US born individuals. Other immigrants that identify as non-White have even lower odds of ambulatory difficulty compared to US born individuals and other immigrants (OR = 0.60, $p < .001$).

Model 2 introduces demographic measures such as sex, age and marital status. Females have 13% higher odds of having ambulatory difficulties compared to men. Married individuals have 53% lower odds of having ambulatory difficulties compared to those that are not married/divorced/widowed or single. In terms of age, ambulatory difficulty increases with each age group. Those aged 50 – 59 years old have over twice the odds to have ambulatory difficulties compared to those in the reference group (age 40 – 49). Those aged 60 – 69 are over three times more likely, those aged 70-79 are over five times more likely,

and those aged 80 and over are over 15 times more likely to have ambulatory difficulties compared to those in the reference group. Model 3 introduces education as a covariate. Individuals that have less than high school education or have a GED are 3.8 times more likely to have ambulatory difficulty compared to those in the reference category (beyond Bachelor's degree). As educational attainment increases, the odds of having ambulatory difficulties decreases. Education attainment show a decrease in the odds of ambulatory difficulties in all groups, except for Eastern European immigrants, compared to Model 2. Model 4 introduces year of immigration as a covariate. The odds of having ambulatory difficulties decreases in all immigrant categories when controlling for covariates. All immigrant groups have higher odds of ambulatory difficulties if they arrived before the year 2000, compared to US born individuals, and lower odds if they arrived after the year 2001.

Model 5 introduces socioeconomic and work measures that immigrants would achieve after arrival to the US. Individuals that are unemployed or not in the labour force are five times more likely than those employed to have ambulatory difficulties. Respondents living in rural areas have 12% higher odds of having ambulatory difficulties compared to those living in urban areas. Those living in the South region of the US are 14% more likely to have ambulatory difficulties compared to those living in the Northeast region of the US. Individuals that do not speak English at home have 36% higher odds of ambulatory difficulty compared to those that speak English at home. Individuals who have health insurance have 56% lower odds of having ambulatory difficulty, compared to those that do not have any health insurance. Lastly, as the total household income increases, the odds of ambulatory difficulty in the sample population decreases.

<Insert Table 3 here>

2.3. Comparison of independent living difficulties across groups

In Table 4, Model 1 adjusts for race/ethnicity and independent living difficulties in the population. Eastern European immigrants have second highest odds of independent living difficulty (OR = 1.27), surpassed only by Black US born individuals (when compared to White US born). Other White immigrants have 3% lower odds of having independent living difficulties compared to White US born individuals. In Model 2, after introducing demographic measures, Eastern European immigrants still have the highest odds of independent living difficulty among all immigrant groups, compared to White US born. Females have 16% higher odds compared to men, and married individuals have 59% lower odds of independent living difficulties compared to unmarried individuals. Individuals over the age of 80 have the highest odds of independent living difficulties, 14.4 times more likely than those in the reference group. In Model 3, after introducing education, individuals that have higher levels of education attainment have lower levels of individual living difficulties. Model 4 shows that immigrants that arrived in the period 1991-2000 have the lowest odds of independent living difficulties, however it is not statistically significant.

Model 5 shows that unemployed individuals, or those that are not in the labour force are 11 times more likely to have independent living difficulties compared to employed individuals. Individuals that do not speak English at home have 74% higher odds of independent living difficulties compared to those that speak English at home. Respondents that have health insurance have 72% lower odds of individual living difficulties compared to those that have no health insurance. As in the case of ambulatory difficulties, as the total household income increases, the independent living difficulties decrease. After controlling

for all covariates, Eastern European immigrants have the highest odds of independent living difficulties (OR = 1.29, $p < .001$) among all the groups.

<Insert Table 4 here>

2.4. Comparison of self-care difficulties across groups

Model 1 in Table 5, shows that Eastern European immigrants have 47% higher odds of self-care difficulties compared to White US born individuals. EE immigrants are only surpassed by Black US born individuals, that have 54% higher odds of self-care difficulties compared to White US born individuals. After introducing demographic measures in Model 2, odds of self-care difficulties increase across age groups, with those aged 80 and over with almost 15 times higher odds of self-care difficulties compared to the reference group. Married individuals have 57% lower odds of self-care difficulties compared to unmarried/divorced/widowed individuals. Model 3 shows that after introducing education as a covariate, as the levels of educational attainment increase, the odds of self-care difficulties significantly decrease. Model 4 shows that immigrants that arrived between 1965 – 1980 have the highest odds of self-care difficulties (OR = 1.24, $p < .001$).

Model 5 presents unemployed/not in the labour force individuals as having over 9 times higher odds of self-care difficulties compared to employed individuals. Individuals that do not speak English at home have 80% higher odds of self-care difficulties compared to those that speak English at home. Individuals that have health insurance have 73% lower odds of self-care difficulties than those that do not have any type of health insurance. Similar to the results in Table 3 and 4, individuals with higher total household income have significantly lower odds of self-care difficulties. After controlling for all covariates, Eastern European

immigrants have the highest odds of self-care difficulties among all groups (OR = 1.55, $p < .001$).

<Insert Table 5 here>

3. Discussion

This study examined the disability of Eastern European immigrants to the United States by using three measures of disability: ambulatory difficulties, independent living difficulties and self-care difficulties. Previous studies have merged all White immigrants to the US into one category when investigating their health outcomes, which may have led to erroneous conclusions that all White immigrants have similar health trajectories after immigrating to the US. This study aimed to separate Eastern European immigrants as a distinct category of immigrants to the United States, instead of being merged with other White immigrants, to showcase that Eastern European immigrants have different disability outcomes compared to other immigrant groups. It is important to separate Eastern European immigrants, since they are a large group of immigrants, they might experience different needs in order to accommodate their disabilities, either in the education, employment, social settings or long-term care.

The data show that Eastern European immigrants have higher independent living and self-care difficulties, compared to White US born individuals. For all disability measures, Eastern European immigrants have higher odds of physical disability before and after controlling for demographic measures, educational attainment, year of immigration and socioeconomic and work measures. The odds of disability are not only higher compared to White US born, but also compared to the other two immigrant categories (other White immigrants and other non-White immigrants), which contradicts the assumption that Eastern

European immigrants have similar health outcomes as other White immigrants. For ambulatory difficulties, there is not a significant difference between Eastern European immigrants and White US born. In terms of independent living difficulties and self-care difficulties have 29 and 55 percent, respectively, higher odds of disability compared to White US born.

The Eastern European results differ across the three disability outcomes due to previous chronic conditions, or are predisposed to various conditions due to health behaviours, although it can only be speculated. As previously mentioned, high prevalence of unhealthy lifestyles (smoking, excessive drinking) in Eastern Europe are responsible for some chronic conditions in later life (Newbold, 2015). Since Eastern European immigrants in this study have higher independent living and self-care difficulties, that could be a result of a multitude of health conditions that could become co-morbidities in later life, which would ultimately impact individuals' abilities to engage in daily activities. Another possible explanation could be that Eastern European immigrants would report more severe disabilities only if they require assistance in their daily activities, otherwise categorizing less severe types of disabilities (such as ambulatory difficulties) as manageable, hence not worth reporting.

What is different about Eastern European immigrants? Why are their odds of disability higher even after controlling for covariates? What can explain the rise in disability odds for Eastern European immigrants after arrival to the US? A possible explanation for the higher odds of disability could be the health of EE immigrants prior to immigration to the US. Studies have shown a striking difference between the health of Eastern Europeans and Western Europeans in their home countries, and the effects of health behaviours and chronic conditions on disability (Mackenbach, 2014). For instance, the prevalence of disability in

some Western European countries was 8.2% in Netherlands, 8.9% in Sweden, 10.9% in Denmark, 14.0% in Germany, while the prevalence of disability in some Eastern European countries was 17.4% in Czech Republic, 18.6% in Hungary, 22.3% in Estonia and 24.6% in Poland (Jerez-Roig et al., 2017). As previously stated, one's country of origin has a significant impact on the health trajectory of an individual. Simultaneously, researchers have argued that the Eastern European immigrants that migrate to the US are the ones with highest socio-economic resources (educational attainment, English proficiency, work experiences, and financial resources), along with overall good health to be able to support the move and relocation in the host country (Kennedy et al., 2014). While the immigrants with highest human capital and in good health are chosen to enter the United States, it is unclear why does the health of Eastern European immigrants start to decline, or what are the predictors that could lead to poorer health outcomes in this population after arrival to the United States.

Some additional findings from the study were that Eastern European immigrants have higher levels of educational attainment compared to US born individuals, as well as other immigrants, particularly at the level of Bachelor's degrees and beyond Bachelor's degrees (Robila, 2008). However, the education obtained in their countries of origin is greatly discounted in the US, particularly at the post-secondary levels (Michalikova, 2017; Robila, 2008). Eastern European immigrants are more likely to be employed compared to US born individuals, however their total household income is lower than US born individual, with 73.3% of EE immigrants making less than \$140,00 USD per year. This finding is consistent with the literature on the socio-economic integration of Eastern European immigrants in the US (Robila, 2008). These findings are important to account for, since educational attainment, employment status and income are common predictors of good or poor health, and in case of

Eastern European immigrants, these predictors cannot explain the high odds of disability. Another noteworthy finding is that racial/ethnic background is not a reason for higher odds of disability. In the descriptive table, Black US born individuals had the highest numbers of ambulatory, independent living and self-care difficulties, followed by Eastern European immigrants, however when covariates were introduced in the Tables 3-5, the odds of disability have decreased for Black US born individuals, but did not for EE immigrants (in the case of self-care difficulties, the odds of disability increased by 8 percent for EE). Despite the significance of the results, the regressions in Tables 3-5 only explain 21 – 26 percent of the relationship between disability and birth place & race/ethnicity. By introducing and accounting for more measure, the relationship between disability and birth place & race/ethnicity could be further explained, giving a more well-rounded understanding of what can impact the relationship between these measures.

There are several limitations that should be noted in the attempt to understand health outcomes in Eastern European immigrants to the United States. First, the health status of Eastern Europeans, as well as other immigrants, is unknown at the time of arrival to the US. Second, the American Community Survey is a cross-sectional data set, hence it misses the health trajectory of Eastern European immigrants in the years prior to immigration and after immigration. Other confounding measures that could have accounted for ambulatory, independent living and self-care difficulties before the survey was administered are also missing, making it more difficult in establishing clearer causes for the high odds of disability in the Eastern European immigrants population. Third, the ACS only investigates ambulatory, independent living, and self-care difficulty as measures of health, while disregarding measures like chronic condition and self-rated health, that could account for

greater differences in the health outcomes of Eastern European immigrants to the US.

Despite these limitations with using ACS, this survey is the only one that inquires respondents' places of birth and year of immigration, along with disability measures, making it possible to observe differences in the health outcomes of various immigrant groups.

4. Conclusion

This study showed that Eastern European immigrants in the US experience significantly more disability than their US-born peers. In the case of the "healthy immigrant effect" framework, this study suggests that the opposite is true for Eastern European immigrants to the US. Based on the results of the study, it can be concluded that EE immigrants do not enjoy a health advantage compared to the native population in the US, while other White immigrants and other non-White immigrants do. The implications of these findings point to different health care needs and long term care needs for EE immigrants which experience higher odds of more severe forms of disability (independent living and self-care difficulties) compared to US born individuals. As a group, EE immigrants might require more assistance from either family members or professionals in dealing with their independent living and self-care difficulties. Further research is needed in the area of the "healthy immigrant effect" framework, and how, as in the case of Eastern European immigrants to the US, the paradigm must be re-evaluated. Future studies need to use an array of health outcomes to examine how the health of Eastern European immigrants to the United States changes over time.

Table 1. Characteristics of the sample population by place of birth (N = 1,440,928)

	U.S born	Eastern European Immigrants	Other Immigrants
Female	52.59	57.90	52.96
Age Group			
40 - 49	24.60	29.09	34.22
50 - 59	26.95	22.34	28.65
60 - 69	24.96	21.49	20.09
70 - 79	15.18	14.50	11.04
80 and above	8.32	12.58	6.00
Married	58.59	68.04	67.25
Education Level			
Less than HS/GED	12.49	10.62	31.75
Highschool Diploma	24.56	19.87	19.73
Some College/Associate	30.15	21.63	18.84
Bachelor's Degree	19.29	23.20	16.93
Beyond Bachelor's Deg.	13.51	24.68	12.74
Urban	88.18	98.56	97.66
Total household income (per year)			
\$19,999 and under	12.53	14.43	12.92
\$20,000 - \$49,999	22.56	20.91	24.63
\$50,000 - \$79,999	18.91	15.87	19.06
\$80,000 - \$109,999	14.12	13.00	13.35
\$110,000 - \$139,999	9.45	9.09	8.93
\$140,000 - 169,999	6.31	7.98	6.00
\$170,000 - \$199,999	3.93	4.25	3.82
\$200,000 and over	10.09	13.42	10.45
Missing/Unreported income	2.10	1.06	0.84
Year of Immigration			
Before 1965		11.44	7.44
1965 - 1980		12.73	22.93
1981 - 1990		17.61	21.10
1991 - 2000		35.94	23.92
After 2001		22.29	24.60
Region			
Northeast Region	18.96	37.50	20.97
Midwest Region	23.07	23.87	9.57
South Region	36.49	16.62	32.67
West Region	21.48	22.01	36.80
Health Insurance	94.61	92.34	85.18
Employed	53.32	56.44	60.63
English speaker	99.87	96.07	90.42
Ambulatory difficulty	13.48	12.03	8.43
Independent living difficulty	8.77	10.34	6.20
Self-care difficulty	5.11	6.83	3.68

Table 2. Disability in the sample population by race/ethnicity and place of birth (N = 1,440,928)

	White EE Immigrants	Other White Immigrants	Other Non- White Immigrants	White US born	Black US born	Hispanic US born	Other race/ethnicity US born
Ambulatory Difficulty	12.03	10.46	7.97	12.68	18.12	13.83	15.08
Individual living difficulty	10.34	8.08	5.78	8.30	11.38	9.12	9.42
Self-care difficulty	6.83	4.88	3.41	4.74	7.10	5.46	5.56

Table 3. Ambulatory difficulties in the sample population (N = 1,440,928)

	Model 1 Baseline	Model 2 + Demographic	Model 3 + Education	Model 4 + Year of immigration	Model 5 + Socioeconomic & work
Race/Ethnicity & Birthplace (White US born - ref.)					
White EE immigrants	0.94	0.91*	0.97	0.88*	1.01
Other White immigrants	0.81***	0.79***	0.77***	0.66***	0.77***
Other Non-White immigrants	0.60***	0.79***	0.61***	0.56***	0.69***
Black US born	1.53***	1.63***	1.43***	1.43***	1.27***
Hispanic US born	1.11***	1.45***	1.18***	1.15***	1.17***
Other US born	1.23***	1.55***	1.50***	1.50***	1.43***
Female		1.13***	1.15***	1.15***	1.09***
Age group (40 – 49 years - ref.)					
50 – 59 years		2.27***	2.17***	2.15***	1.97***
60 – 69 years		3.69***	3.56***	3.50***	1.95***
70 – 79 years		5.69***	5.34***	5.23***	2.00***
80 years and over		15.22***	13.63***	13.32***	4.52***
Married		0.47***	0.51***	0.51***	0.63***
Highest Level of Education (Beyond Bachelor's Degree - ref.)					
Less than HS/GED			3.79***	3.79***	2.32***
High School Diploma			2.32***	2.32***	1.69***
Some College/Associate Degree			2.08***	2.07***	1.67***
Bachelor's Degree			1.18***	1.18***	1.07***
Year of Immigration (US born - ref.)					
Before 1965				1.28***	1.14**
1965 – 1980				1.22***	1.09
1981 – 1990				1.06	1.02
1991 – 2000				1.02	0.98
After 2001				0.93	0.82***
Employment Status (Employed - ref.)					
Unemployed/Not in the labour force					5.21***
Rural					1.12***
Census region of residence (Northeast - ref.)					
Midwest Region					1.03*
South Region					1.14***
West Region					1.03*
Speaks English at home (ref)					
Does not speak English at home					1.36***
Health insurance present					0.44***
Total household income (Less than \$20,000 - ref.)					
\$20,000 - \$ 49,999					0.79***
\$50,000 - \$79,999					0.71***
\$80,000 - \$109,999					0.65***
\$110,000 - \$139,999					0.60***
\$140,000 - \$169,999					0.55***
\$170,000 - \$199,999					0.51***
\$200,000 +					0.44***
Missing/Unreported income					2.85***
N	1440928	1440928	1440928	1440928	1440928
pseudo R ²	0.008	0.125	0.146	0.146	0.216

Exponentiated coefficients

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

Table 4. Independent living difficulties in the sample population (N = 1,440,928)

	Model 1 Baseline	Model 2 + Demographic	Model 3 + Education	Model 4 + Year of immigration	Model 5 + Socioeconomic & work
Race/Ethnicity & Birthplace (White US born - ref.)					
White EE immigrants	1.27***	1.22***	1.29***	1.09	1.29***
Other White immigrants	0.97	0.95*	0.91***	0.74***	0.88*
Other Non-White immigrants	0.68***	0.91***	0.68***	0.58***	0.73***
Black US born	1.42***	1.49***	1.29***	1.29***	1.13***
Hispanic US born	1.11***	1.42***	1.13***	1.09***	1.10***
Other US born	1.15***	1.42***	1.37***	1.37***	1.26***
Female		1.16***	1.18***	1.18***	1.14***
Age group (40 – 49 years - ref.)					
50 – 59 years		1.62***	1.54***	1.53***	1.29***
60 – 69 years		2.22***	2.12***	2.09***	0.95*
70 – 79 years		3.76***	3.45***	3.39***	1.03
80 years and over		14.40***	12.58***	12.34***	3.28***
Married		0.41***	0.45***	0.45***	0.55***
Highest Level of Education (Beyond Bachelor's Degree - ref.)					
Less than HS/GED			4.06***	4.05***	2.45***
High School Diploma			2.47***	2.47***	1.82***
Some College/Associate Degree			1.90***	1.90***	1.55***
Bachelor's Degree			1.23***	1.23***	1.13***
Year of Immigration (US born - ref.)					
Before 1965				1.32***	1.15**
1965 – 1980				1.29***	1.12*
1981 – 1990				1.14*	1.07
1991 – 2000				1.07	1.02
After 2001				1.14*	0.97
Employment Status (Employed - ref.)					
Unemployed/Not in the labour force					11.09***
Rural (Urban – ref.)					1.02
Census region of residence (Northeast - ref.)					
Midwest Region					1.01
South Region					1.06***
West Region					1.01
Speaks English at home (ref)					
Does not speak English at home					1.74***
Health insurance present					0.28***
Total household income (Less than \$20,000 - ref.)					
\$20,000 - \$ 49,999					0.84***
\$50,000 - \$79,999					0.82***
\$80,000 - \$109,999					0.78***
\$110,000 - \$139,999					0.76***
\$140,000 - \$169,999					0.71***
\$170,000 - \$199,999					0.67***
\$200,000 +					0.61***
Missing/Unreported income					5.65***
N	1440928	1440928	1440928	1440928	1440928
pseudo R ²	0.005	0.141	0.162	0.162	0.265

Exponentiated coefficients

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

Table 5. Self-care difficulties in the sample population (N = 1,440,928)

	Model 1 Baseline	Model 2 + Demographic	Model 3 + Education	Model 4 + Year of immigration	Model 5 + Socioeconomic & work
Race/Ethnicity & Birthplace (White US born - ref.)					
White E.E immigrants	1.47***	1.42***	1.49***	1.32***	1.55***
Other White immigrants	1.03	1.02	0.99	0.85*	1.04
Other Non-White immigrants	0.71***	0.97	0.77***	0.68***	0.85**
Black US born	1.54***	1.63***	1.44***	1.44***	1.26***
Hispanic US born	1.16***	1.51***	1.24***	1.21***	1.25***
Other US born	1.18***	1.47***	1.43***	1.42***	1.33***
Female		1.02*	1.03*	1.03*	1.03*
Age group (40 – 49 years - ref.)					
50 – 59 years		1.84***	1.76***	1.75***	1.51***
60 – 69 years		2.69***	2.58***	2.55***	1.27***
70 – 79 years		4.36***	4.04***	3.99***	1.35***
80 years and over		14.95***	13.09***	12.92***	3.76***
Married		0.43***	0.47***	0.47***	0.62***
Highest Level of Education (Beyond Bachelor's Degree - ref.)					
Less than HS/GED			3.34***	3.34***	2.00***
High School Diploma			2.35***	2.25***	1.62***
Some College/Associate Degree			1.83***	1.83***	1.49***
Bachelor's Degree			1.21***	1.21***	1.11***
Year of Immigration (US born - ref.)					
Before 1965				1.16**	1.03
1965 – 1980				1.24***	1.10
1981 – 1990				1.15*	1.10
1991 – 2000				1.12	1.09
After 2001				0.98	0.86*
Employment Status (Employed - ref.)					
Unemployed/Not in the labour force					9.38***
Rural					1.01
Census region of residence (Northeast - ref.)					
Midwest Region					1.04
South Region					1.10***
West Region					1.03
Speaks English at home (ref)					
Does not speak English at home					1.80***
Health Insurance					
Total household income (Less than \$20,000 - ref.)					0.27***
\$20,000 - \$ 49,999					0.83***
\$50,000 - \$79,999					0.79***
\$80,000 - \$109,999					0.73***
\$110,000 - \$139,999					0.74***
\$140,000 - \$169,999					0.68***
\$170,000 - \$199,999					0.68***
\$200,000 +					0.57***
Missing/Unreported income					7.51***
N	1440928	1440928	1440928	1440928	1440928
pseudo R ²	0.005	0.125	0.139	0.139	0.242

Exponentiated coefficients

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

References

- Antecol, H., & Bedard, K. (2006). Unhealthy Assimilation: Why Do Immigrants Converge to American Health Status Levels? *Demography*, 43(2), 337–360.
<https://doi.org/10.1353/dem.2006.0011>
- Bíró, A. (2018). Health of Central and Eastern European migrants in Germany: Healthy migrant effects and good health maintained? *International Journal of Migration, Health and Social Care*, 14(1), 68–81. <https://doi.org/10.1108/IJMHS-03-2017-0008>
- Boen, C. E., & Hummer, R. A. (2019). Longer—But Harder—Lives?: The Hispanic Health Paradox and the Social Determinants of Racial, Ethnic, and Immigrant–Native Health Disparities from Midlife through Late Life. *Journal of Health and Social Behavior*, 60(4), 434–452. <https://doi.org/10.1177/0022146519884538>
- Chatterji, S., Byles, J., Cutler, D., Seeman, T., & Verdes, E. (2015). Health, functioning, and disability in older adults—Present status and future implications. *The Lancet*, 385(9967), 563–575. [https://doi.org/10.1016/S0140-6736\(14\)61462-8](https://doi.org/10.1016/S0140-6736(14)61462-8)
- Dorynska, A., Pajak, A., Kubinova, R., Malyutina, S., Tamosiunas, A., Pikhart, H., Peasey, A., Nikitin, Y., Marmot, M., & Bobak, M. (2012). Socioeconomic circumstances, health behaviours and functional limitations in older persons in four Central and Eastern European populations. *Age and Ageing*, 41(6), 728–735. <https://doi.org/10.1093/ageing/afs114>
- Foubert, J., Levecque, K., Van Rossem, R., & Romagnoli, A. (2014). Do welfare regimes influence the association between disability and self-perceived health? A multilevel analysis of 57 countries. *Social Science & Medicine*, 117, 10–17.
<https://doi.org/10.1016/j.socscimed.2014.07.023>

- Gokengin, D., Oprea, C., Begovac, J., Horban, A., Zeka, A. N., Sedlacek, D., Allabergan, B., Almamedova, E. A., Balayan, T., Banhegyi, D., Bukovinova, P., Chkhartishvili, N., Damira, A., Deva, E., Elenkov, I., Gashi, L., Gexha-Bunjaku, D., Hadciosmanovic, V., Harxhi, A., ... Yurin, O. (2018). HIV care in Central and Eastern Europe: How close are we to the target? *International Journal of Infectious Diseases*, 70, 121–130.
<https://doi.org/10.1016/j.ijid.2018.03.007>
- Hamilton, T. G., Palermo, T., & Green, T. L. (n.d.). United States: The Impact of Ignoring Arrival-cohort Effects. *Journal of Health and Social Behavior*, 18.
- Jagger, C., Gillies, C., Cambois, E., Van Oyen, H., Nusselder, W., & Robine, J.-M. (2010). The Global Activity Limitation Index measured function and disability similarly across European countries. *Journal of Clinical Epidemiology*, 63(8), 892–899.
<https://doi.org/10.1016/j.jclinepi.2009.11.002>
- Jerez-Roig, J., Bosque-Prous, M., Gine-Garriga, M., Bagur-Calafat, C., Espelt, A. (2017). Regional Differences in Disability Among Community-Dwelling Older People in Europe. *Inovvation in Aging*, 1, 800.
- Kelleher, D., Barry, L., Hobbins, A., O'Neill, S., Doherty, E., & O'Neill, C. (2020). Examining the transnational health preferences of a group of Eastern European migrants relative to a European host population using the EQ-5D-5L. *Social Science & Medicine*, 246, 112801.
<https://doi.org/10.1016/j.socscimed.2020.112801>
- Lee, S., O'Neill, A. H., Ihara, E. S., & Chae, D. H. (2013). Change in Self-Reported Health Status among Immigrants in the United States: Associations with Measures of Acculturation. *PLoS ONE*, 8(10), e76494. <https://doi.org/10.1371/journal.pone.0076494>

- Mackenbach, J. P., Roskam, A.-J. R., Schaap, M. M., & Menvielle, G. (2008). Socioeconomic Inequalities in Health in 22 European Countries. *New England Journal of Medicine*, 14.
- Malisauskaite, G., & Klein, A. (2018). Drinking under communism: Why do alcohol consumption habits in Eastern Europe differ from the west in the long-run? *Journal of Comparative Economics*, 46(3), 821–837. <https://doi.org/10.1016/j.jce.2018.07.010>
- Markides, K. S., & Rote, S. (2019). The Healthy Immigrant Effect and Aging in the United States and Other Western Countries. *Gerontologist*, 59(2), 205-214. <https://doi:10.1093/geront/gny136>
- Marmot, M., Allen, J., Bell, R., Bloomer, E., & Goldblatt, P. (2012). WHO European review of social determinants of health and the health divide. *The Lancet*, 380(9846), 1011–1029. [https://doi.org/10.1016/S0140-6736\(12\)61228-8](https://doi.org/10.1016/S0140-6736(12)61228-8)
- Mehta, N. K., & Elo, I. T. (2012). Migrant Selection and the Health of U.S. Immigrants From the Former Soviet Union. *Demography*, 49(2), 425–447. <https://doi.org/10.1007/s13524-012-0099-7>
- Phung, V.-H., Asghar, Z., Matiti, M., & Siriwardena, A. N. (2020). Understanding how Eastern European migrants use and experience UK health services: A systematic scoping review. *BMC Health Services Research*, 20 (1), 173. <https://doi.org/10.1186/s12913-020-4987-z>
- Read, J. G., West, J. S., & Kamis, C. (2020). Immigration and health among non-Hispanic whites: The impact of arrival cohort and region of birth. *Social Science & Medicine*, 246, 112754. <https://doi.org/10.1016/j.socscimed.2019.112754>
- Riosmena, F., Kuhn, R., & Jochem, W. C. (2017). Explaining the Immigrant Health Advantage: Self-selection and Protection in Health-Related Factors Among Five Major National-Origin Immigrant Groups in the United States. *Demography*, 54(1), 175–200. <https://doi.org/10.1007/s13524-016-0542-2>

- Riosmena, F., Wong, R., & Palloni, A. (2013). Migration Selection, Protection, and Acculturation in Health: A Binational Perspective on Older Adults. *Demography*, 50(3), 1039–1064. <https://doi.org/10.1007/s13524-012-0178-9>
- Robila, M. (2008). Characteristics of Eastern European Immigration in the United States. *Journal of Comparative Family Studies*, 39(4), 545–556. <https://doi.org/10.3138/jcfs.39.4.545>
- Ruggles, S., Flood, S., Goeken, R., Grover, J., Meyer, E., Pacas, J., & Sobek, M. IPUMS USA: Version 10.0 [dataset]. Minneapolis, MN: IPUMS, 2020. <https://doi.org/10.18128/D010.V10.0>
- Stephoe, A., Deaton, A., & Stone, A. A. (2015). Subjective wellbeing, health, and ageing. *The Lancet*, 385(9968), 640–648. [https://doi.org/10.1016/S0140-6736\(13\)61489-0](https://doi.org/10.1016/S0140-6736(13)61489-0)