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Final Project
Non-Hispanic Whites Health: Ancestry's Causation with Disabilities

Abstract

We continue the study regarding more recent years on the patterns of racial health differences. The intention of this study is to divide non-Hispanic White adults by different ancestries into separate categories in order to compare health disparities among the non-Hispanic White population. We examine the health status of adults by utilizing the ACS 2019 Integrated Public Use Microdata Series (IPUMS). Using this data, we inspect racial differentiation in disabilities between non-Hispanic Whites and other races/ethnicities utilizing logistic regression and ordinary least squares regression (OLS) to analyze and study whether placing non-Hispanics Whites into subgroups based on ancestry alters the relationship of health disparities. Our study investigates reported disabilities of the non-Hispanic White group and compares them to other major racial groups. We found a complex relationship of the health disparities between and among racial groups, where a clear determination is complicated. One point to note is that demographic and socioeconomic covariates have an effect on health disparities since variation in racial categories diminishes when incorporating the additional variables. The data indicates that not segmenting within the White population and looking at a sole disability outcomes is an error since there are observable differences in the health disabilities of Whites.

Introduction

The United States has an increasing diversity in its citizens' races and ethnicities. In the past half-century, there have been decade-long shifts in origin and migration patterns in the

United States. Resulting in a shift of immigration away from traditional Western European nations, leading to a stream of new immigrants born in Latin America, Africa, and Asia (National Academies of Sciences, Engineering, and Medicine, et al. 2015). The movement in immigration increased the vast ethnic diversity and further promoted the ethnic heterogeneity of the United States. As the mostly White baby boom generation grows older and passes away, immigrants from various ethnic origins are expected to make up a greater proportion of the senior population (Lichter 2013). The change of racial heterogeneity has led researchers away from broad approaches in studying health inequalities for universal racial groups like Blacks, Whites, and Hispanics. Research that divides ethnic groups into individual segments, demonstrates expanding heterogeneity such as Hispanics individual health outcomes (Almeida et al. 2016; Fenelon et al. 2017; Murillo et al. 2016; Read, Jen'nan Ghazal, et al. 2021; Verissimo et al. 2014), as well as the health of the Asian population (Brown 2016; Cook 2017; Fuller-Thomson et al. 2011; Gee and Ponce 2010; Read, Jen'nan Ghazal, et al. 2021; Ro et al. 2015; Yi et al. 2016), and finally studies where the Black community is segmented (Elo et al. 2011; Hamilton and Hummer 2011; Hamilton 2014; Hamilton and Green 2017; Hendi et al. 2015; Read, Jen'nan Ghazal, et al. 2021).

In contrast, there is less extensive research on health disparities of non-Hispanic Whites compared to minority groups. After evaluating articles, studies focusing on differences between racial groups tend to place non-Hispanic Whites into a single population, and rarely test if there are differences among non-Hispanic Whites. The health of the White racial group is grounded in a structure that Whiteness rewards individuals of Western European ancestry and neglects people of other ancestral origin. (Malat et al. 2018; Read, Jen'nan Ghazal, et al. 2021). However, there are other non-Hispanic Whites besides Western Europeans. White people who trace their lineage

from North Africa, Western Asia, the Middle East, and Eastern Europe, are becoming a substantial proportion of the White racial group. (Hixson et al. 2011; Mehta and Elo 2012; Office of Management and Budget 1997; Read, Jen'nan Ghazal, et al. 2021). Depending on the ancestry and migration patterns, different groups within the non-Hispanic White population could have been exposed and susceptible to events that caused health complications.

The reviewed articles demonstrated some diversity among Whites, calling for a more thorough exploration. This study will use the 1-in-100 random sample IPUMS data from the American Community Survey of 2019. We utilize the ACS data to break up the White racial group by ancestral ties to evaluate distinctions in race/ethnicity based on health disabilities. This study focuses on the differentiation among White people from different regions of Europe, specifically the West and East, the Middle East combined with North Africa, as well as North America respectively. We can observe in the U.S. Census that ancestral lineages are demonstrated in the major racial groups (Office of Management and Budget 1997). Therefore, we can see the difference in health levels for specific White Europeans subcategories, as well the health variances within non-Hispanic Whites relative to Blacks, Asians, and Hispanics.

Background

The United States has increasingly become a more diverse nation. Historically, individuals have been segmented into five basic major races: White, Black, Asian, Native American, and Hispanic. Unfortunately, this method does not show distinctions in the health of racial/ethnic communities within the five segmented categories. "Between 1970 and 2015, immigrants jumped from 5% to 14% of the population and shifted from being predominantly European origin (75%) to being Latin American (52%) and Asian (30%) origin" (Read, Jen'nan Ghazal, et al. 2021). Creating an ethnic diversity of racial groups with more heterogeneity than

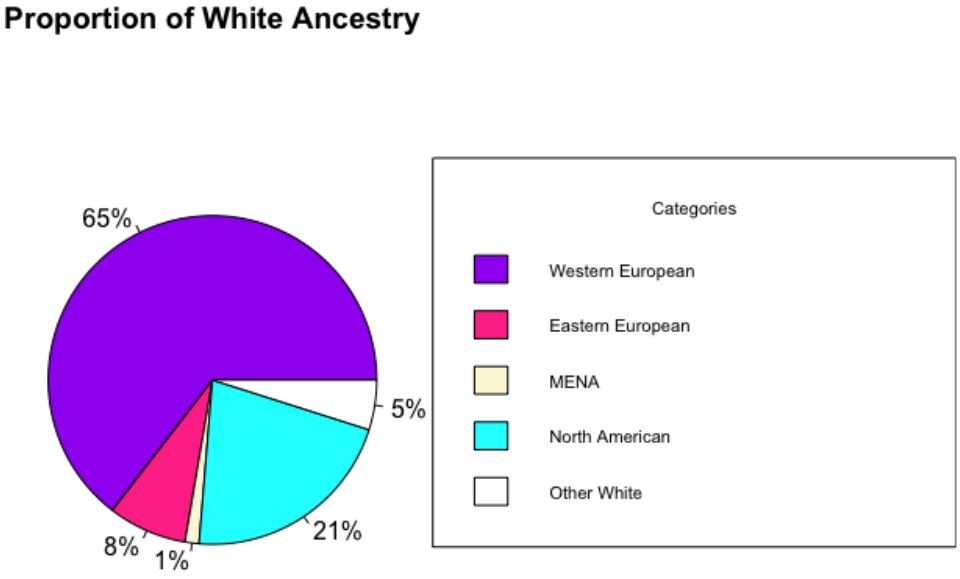
any time in the history of the United States. Such is the case with immigration patterns from Asian Americans ranging from China, Russia, and India, each of which represent a distinct ethnic group with identifiable cultural differences. Most research has not analyzed differences of the non-Hispanic White population, even though non-Hispanic White immigrants have ancestry from North America, as well as Europe, Asia and even includes Africa.

When analyzing the United States healthcare system, races have become increasingly diverse in the drawing the awareness of researchers and legislators of potential health issues affecting these groups. In some cases, the descriptions originally applied to explain immigrants' health status differ depending on race and ethnicity. The "Hispanic paradox" refers to the special case where Hispanics generally experience less health complications even though they have lower socio-economic attainments, whereas other immigrant groups that migrate to the United States may have higher socio-economic positions yet demonstrate poorer health outcomes. (Akresh and Frank 2008; Mehta and Elo 2012; Read, Jen'nan Ghazal, et al. 2021). Indicating there are cases where noticeable health disparities may vary, say between Cubans and Mexicans, where the former has worse overall health outcomes compared to the latter. (Read, Jen'nan Ghazal 2006, 2021; Rogers et al. 2000; Vega and Amaro 1994). The Black racial group in the U.S. have health disparities that vary significantly depending on nativity as well as birth region, where foreign born Black people have less propensity for health complications than Black people born in the U.S, while African immigrants had higher levels of general health compared to Latin Americans, Europeans, and those from the Caribbean (Hamilton and Hummer 2011; Hamilton and Green 2017; Read, Jen'nan Ghazal, et al. 2021). Suggesting that sizeable racial groups increase the difficulty of analyzing the health inequalities among ethnic groups due the diversity of ethnic origins inside racial groups.

History of Diversity Among Whites

While many studies have researched the distinctions among minority groups, there are few studies that acknowledge the diversity inside the White community. A thorough review of existing literature found only a single study that coherently separated the health status based on the ethnicity of non-Hispanic Whites. Additionally, non-Hispanic Whites are traditionally labelled as a uniform reference group when investigating racial and ethnic imbalances. As an illustration, "recent research has examined disparities between Whites and other racial/ethnic groups in areas such as wealth accumulation (Killewald and Bryan 2018), the use of network ties to seek employment (Silva 2018), and health (Brown 2018; Lippert and Damaske 2018; Shandra 2018)" (Read, Jen'nan Ghazal, et al. 2021). In the case of these studies, together with the annual National Healthcare Quality & Disparities Report, non-Hispanic Whites is the baseline group used to contrast against other racial/ethnic categories to evaluate the differences in health.

Figure 0



The immigration patterns have vastly changed over the last several decades yielding a higher heterogeneity among the non-Hispanic White community, leading us to believe that we cannot view them as a homogeneous analogous group (Read and Reynolds 2012; National Academies of Sciences, Engineering, and Medicine, et al. 2015). “In 1980, the majority of all persons (226 million) enumerated in the U.S. Census were of Irish, English, and German ancestry (Farley 1991), and most of the foreign-born population was also of western European descent” (Read, Jen’nan Ghazal, et al. 2021). The transformation in immigration origins continued from 1980, where the Irish, English, and German ancestry population fell fiercely (U.S. Census Bureau 2015). Therefore, a decline of immigration from Western European nations decreases in the percentage of people with Western European descent, where the percentage fall of immigration from 1980 through 2016 was roughly 20 percent (Read, Jen’nan Ghazal, et al. 2021). Comparatively, the migrations patterns of the Eastern European, Middle Eastern and North African non-Hispanic White populations are unwavering. Also, immigrants categorized as other White & North American have doubled in population when analyzing the same time interval (Read, Jen’nan Ghazal, et al. 2021).

Immigration patterns in the White community are altered due to potential political and social influences including the lack economic prosperity in origin countries (The National Research Council on the Integration of Immigrants into American Society 2016). In Eastern Europe as well as the Middle East and North Africa, there are increases in immigration, noticeably due to civil unrest that arose from political, social, and economic instability. A divergence exists between western Europeans and Europeans of other ancestries due to intra-state tensions. “For example, the breakdown of the Former Soviet Union (FSU) contributed to a large influx of FSU immigrants in the late 1980s (Mehta and Elo 2012), and political turmoil

throughout the Middle East and North Africa has contributed to the Arab population in the U.S. doubling in size since 1980 (de la Cruz and Brittingham 2003; Jamal and Naber 2008)" (Read, Jen'nan Ghazal, et al. 2021). After 9/11, immigrants with ethnic origins from the Middle East and North Africa were the targets of negative reception (Bakalian and Bozorgmehr 2009; Jamal and Naber 2008; Read, Jen'nan Ghazal, et al. 2021).

A limited number of studies has aimed at obtaining a greater comprehension of the disparities in the White racial group, where is a minimal amount of data available to aid in the interpretation of these health disparities. "Much of this work has focused on individuals of Middle Eastern and North African descent and found that patterns in health diverge from those of the average White population across a host of outcomes, including cancer (Bergmans Et al. 2014), chronic disease diagnoses (Dallo and Kindratt 2016), self-rated health (Read and Reynolds 2012), cognitive health (Ajrouch et al. 2017), and disability (Dallo et al. 2009, 2015; Read et al. 2019)" (Read, Jen'nan Ghazal, et al. 2021). The articles isolated the Eastern Europeans from the larger White designation and indicated that Eastern Europeans had below average health conditions in their data. The author provides an example from the Former Soviet Union where immigrants are documented to have greater health disabilities than Whites born in the United States, although people from Eastern Europe hold higher degree designations (Mehta and Elo 2012).

"In particular, when a country or region experiences prolonged periods of unrest and instability, it effects whether and what type of work is available, the degree of access to adequate nutrition, clean water, and medical care, as well as increased exposures to toxins and environmental hazards, all of which could compromise mobility and functional health" (Levy and Sidel 2013)" (Read, Jen'nan Ghazal, et al. 2021). For example, in the U.S. individuals with

disabilities suffer limitations in a multitude of aspects (Erickson et al. 2020) and are prone to discrimination, such as employment opportunities (Ameri et al. 2017; Green et al. 2005; Read, Jen'nan Ghazal, et al. 2021). These are examples of studies where disability is used to demonstrate health inequalities (Shandra 2018) of people that are foreign born.

There have only been minimal extensive studies into the disparity of health among the U.S. White population. Grouping Whites as a homogenous bulk could potentially lead to a misrepresentation of health conditions among Whites. As well as the differences among the White community and other races due to various ethnic origins of White people. This bulk approach of classification could possibly skew results when comparing Whites to other racial ethnic groups. We will be using Integrated Public Use Microdata Series (IPUMS 2019) to examine three questions: whether there are interracial health differences in the White race and other races. Next, we will analyze White subgroup classifications to determine any subsequent disparities within the monolithic group. Finally, we will inspect to what extent distinctions in social demographic attributes relate to observed health disparities.

Methods

Sample

We will be expanding on previous literature journals using data from the one-year file of 2019 Public Use Microdata Sample (IPUMS 2019). The Microdata sample includes households and persons from the 1% weighted ACS Sample. The IPUMS 2019 data was chosen because in our analysis the material will provide a segmented breakdown of the specific racial/ethnic groups we are evaluating. Our study will analyze White, Black, Asian, and Hispanic groups that are greater than 40 years old due to the fact that health complications start showing around the

selected age range (Martin and Schoeni 2014). The IPUMS USA data is a weighted sample, therefore our analysis is representative of the United States population.

Measures

We will be using 5 dependent variables in our analysis, taken from the 5 questions that are asked about different types of disabilities within each household. The survey questions ask about the following disabilities: self-care (like showering); independent living (the inability to perform daily tasks); cognitive functions (such as learning, mental recollection and decision making); vision (where one has diminished sight or strain to see); and hearing (where one is deaf or straining to hear). The responses in the data for the five questions above are annotated with (0 = no, 1 = yes) to differentiate individuals. We inspect the five disabilities individually in order to view distinct health conditions (Altman et al. 2017).

We are interested in race and ethnicity, where we examine the so called major racial groups. The IPUMS data has subcategorized respondents as Hispanic, Latino or Spanish origin where the response is "yes = 1" to Hispanic descent for ethnicity. In our analysis, we have created dummy variables for Whites, Blacks, Asians, Hispanics, and Other Races. Later on, we segment the major racial/ethnic groups into subgroup categories of ancestry. Next, we separated Whites by their response to "ANCESTR1" into 5 distinct classes of Western Europeans, Middle Eastern/North Africans (which we will refer to as MENA), Eastern Europeans, North Americans, and Other Whites, where we will refer to them by their ancestral groups for the continuation of our study. "We likewise used U.S. Census classification categories to disaggregate non-Hispanic Blacks (North American, African, West Indian, European, Central/South American, other Blacks); non-Hispanic Asians (Chinese, Filipino, Asian Indian, Vietnamese, Korean, Japanese,

other Asian); and Hispanics (Mexican, Puerto Rican, Central American, South American, Cuban, other Hispanic)" (Read, Jen'nan Ghazal, et al. 2021).

Furthermore, we estimate how compositional distinctions contribute to health complications regarding racial/ethnic categories, since studies demonstrate differences in sociodemographic and immigration qualities (Olshansky et al. 2012; Read et al. 2019, 2020, 2021; Vierboom et al. 2019). In our analysis we utilize demographic, socioeconomic and immigrant attributes. For the demographic attributes we test age (how many years old) and sex (male = 1 or female = 2). Marital status is defined and computed as married, separated/divorced, widowed, or never married/single. The regions are computed as dummy variables for Northeastern, Midwestern, Southern regions against the Western region. For socioeconomic attributes we test two dummy variables. The first is educational attainment, where we grouped respondents by less than high school (no schooling to 12th graders), those that received a degree for high school, those with some college education, and those that obtained a college degree (includes a bachelor's or higher). The second dummy variable is regarding health insurance, where we code for those without health insurance. Lastly, we incorporate two measures that impact health in immigrant groups. We will be using the data to create a dummy variable for non-citizens; while the other variable is on English language proficiency and comprehension, compared to the people who have limited or no understanding of the English language.

Analytical Strategy

To explore our data set, we will conduct a couple regressions. We start by running logit models for the five health disabilities detailed above, utilizing dummy variables with respect to the major racial/ethnic classes and for the created ancestry subclasses (23 dummies). We have concluded that two models will be of the most interest. In Model 1, we will look at just the racial

categories and subcategories. In Model 2, we will incorporate all additional dummy variables to have a broad scope of the health conditions affecting the racial groups. Model 1 returns a diverse assortment of health outcomes between major racial classes, and the racial/ethnic/ancestral subclasses respectively. In Model 2, we assess the impact of age, the second polynomial of age, sex, socioeconomic disparities, and other factors with respect to disabilities. From other studies, we assume there may be a minimal link between age and sex, to show differences inside racial groups (Read, Jen'nan Ghazal, et al. 2021).

To finalize our analysis, we observe the five generated White ancestry subclasses to evaluate how those of Western European ancestry differ from the rest of the White ancestry subgroups. We also use logistic regressions and Ordinary Least Squares (OLS) regressions; however, we will be discussing more on logistic regressions for simplicity's sake **(refer to appendix for OLS pg.).** This model tests the five health disabilities using the White ancestry groups, while other models test White ancestry groups and all the additional covariates. The results display the most relevant models and graphs, all additional models will be found in the appendix section.

Results

Our summary statistical table for those over 40 years old presents traits for the four main racial groups, and the five subgroup ancestry categories. The sample statistics for the additional racial categories are available in the appendix ***[pg.37]***. The data revealed in most cases that Blacks have a higher proportion of disability when compared to Whites. Blacks with an independent living disability (13.2%) are higher in proportion when compared to Whites (12.2%). However, those with independent living disabilities that are Asian (6.7%) and Hispanic (8.4%) are a lower proportion compared to Whites.

Figure 1

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	Western European (N=102970)	Eastern European (N=12364)	MENA (N=1661)	North American (N=30961)	Other White (N=6714)	Overall (N=262025)
Any_Disability						
Yes	16945 (16.5%)	1880 (15.2%)	220 (13.2%)	6777 (21.9%)	1209 (18.0%)	47431 (18.1%)
No	86025 (83.5%)	10484 (84.8%)	1441 (86.8%)	24184 (78.1%)	5505 (82.0%)	214594 (81.9%)
Disability Self-Care						
Yes	4232 (4.1%)	503 (4.1%)	91 (5.5%)	2123 (6.9%)	340 (5.1%)	14635 (5.6%)
No	98738 (95.9%)	11861 (95.9%)	1570 (94.5%)	28838 (93.1%)	6374 (94.9%)	247390 (94.4%)
Disability Independent Living						
Yes	7602 (7.4%)	908 (7.3%)	136 (8.2%)	3504 (11.3%)	583 (8.7%)	24297 (9.3%)
No	95368 (92.6%)	11456 (92.7%)	1525 (91.8%)	27457 (88.7%)	6131 (91.3%)	237728 (90.7%)
Disability Cognitive Thinking						
Yes	5359 (5.2%)	588 (4.8%)	72 (4.3%)	2749 (8.9%)	504 (7.5%)	18342 (7.0%)
No	97611 (94.8%)	11776 (95.2%)	1589 (95.7%)	28212 (91.1%)	6210 (92.5%)	243683 (93.0%)
Disability Vision						
Yes	3241 (3.1%)	358 (2.9%)	45 (2.7%)	1374 (4.4%)	253 (3.8%)	10101 (3.9%)
No	99729 (96.9%)	12006 (97.1%)	1616 (97.3%)	29587 (95.6%)	6461 (96.2%)	251924 (96.1%)
Disability Hearing						
Yes	8124 (7.9%)	835 (6.8%)	66 (4.0%)	2783 (9.0%)	496 (7.4%)	19060 (7.3%)
No	94846 (92.1%)	11529 (93.2%)	1595 (96.0%)	28178 (91.0%)	6218 (92.6%)	242965 (92.7%)

Additionally, when looking at those with a self-care disability, we see similar results: Blacks (8.7%) are greater than Whites (8.0%) while Asians and Hispanics make up 4.7% and 5.2% respectively which may suggest a highesr level of autonomy. *Figure 1* shows the White ancestry groups, where there are 6 variables: any disability, self-care disability, independent living disability, cognitive function disability, vision disability and hearing disability. We note that Other Whites have the highest proportion of individuals in the any disability category, while the remaining White ancestries vary. For example, the likelihood of Western Europeans having any disability is 16.5%, for Eastern Europeans it is 15.2%, MENA has a 13.2% of any disability, North American is a 21.9%, lastly other Whites recorded 18%. Additionally, the White Eastern European category has the second lowest proportion out of the ancestry groups regarding those with a hearing disability (6.8%). While the White North American category has the largest proportion of people with a self-care disability (6.0%). Moving on, socioeconomic differences exist inside the major White racial group, as we can note by observing the White ancestry categories. In the White ancestry subgroup, Western Europeans, MENA, and Other Whites have

a higher proportion of women, while North Americans tend to consist of more men. Regionally, the Western Europeans and Other White subgroups are more concentrated in the South compared to the rest of the ancestry sub-groups. In regard to education, those of Western European Ancestry have a substantial number of individuals that lack a high school education (31.8%). Also, the White Western European category had a considerable number of individuals with no insurance coverage ($\mu = 0.16$). The rate of material status of the Western European White ancestry subgroup is (~ 62.1%) and for North American White (~71.2%). Finally, those of Western European ancestry are more likely to be linguistically isolated and possess a lack of citizenship.

We begin analyzing regressions by evaluating the health disparities based on the five disabilities in the main racial groups. *Figure 2* expresses the summaries of the logistic regressions, while *Figure 3* shows the graphical coefficients for logistic regressions based on the main racial groups. *Figure 2* uses Model 1, which is composed of the major racial groups testing against the dependent variables (the five types of disabilities). While *Figure 4* (Appendix pg.38-39) uses Model 2, which includes all additional covariates and *Figures 5-9 (*Appendix pg.39-41) express their graphical coefficients. In the coefficient graphs, as well as with the summary output, we see a similar pattern. In *Figures 2 and 3,* for the majority of regressions, Blacks tend to show higher coefficients for disabilities compared to Whites, indicating that Blacks have a greater probability to be disabled, followed by Hispanics, Whites, then Asians. The one exception is regarding hearing disabilities, where Whites have the most elevated coefficients, followed by Hispanics, Blacks than Asians. We can note that in *Figures 4-9* ***[Appendix pg.38-41]***, which includes all the covariates, the variation between racial categories with respect to

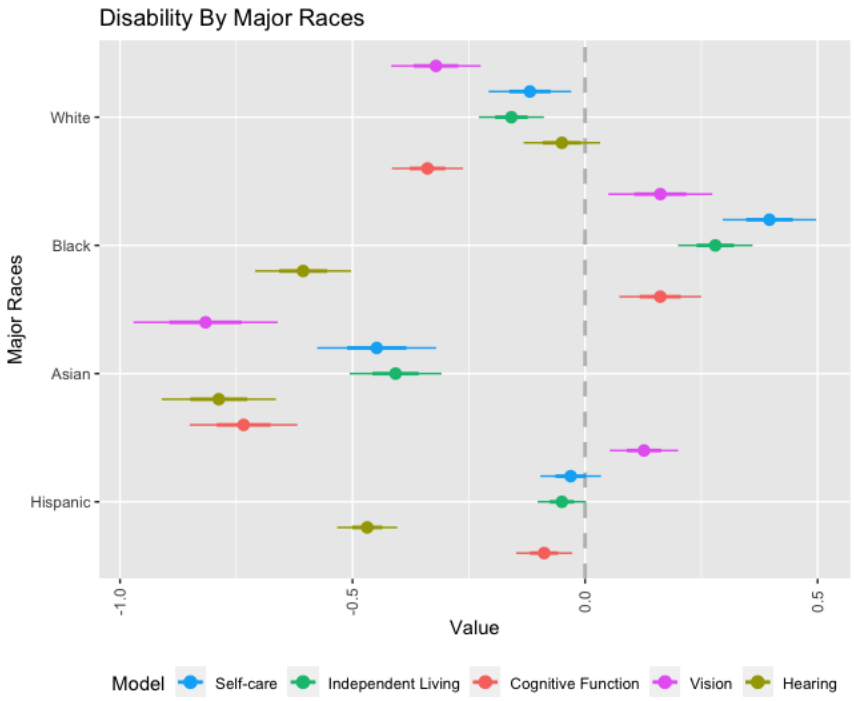
Figure 2

Model 1, Major Racial Groups

	Dependent variable:				
	Self-Care Disability	Independent Living Disability	Cognitive Function Disability	Vision Disability	Hearing Disability
	(1)	(2)	(3)	(4)	(5)
White	-0.096**	-0.130***	-0.317***	-0.290***	-0.005
	(0.043)	(0.033)	(0.036)	(0.046)	(0.040)
Black	0.396***	0.286***	0.171***	0.191***	-0.568***
	(0.048)	(0.038)	(0.042)	(0.053)	(0.050)
Asian	-0.501***	-0.460***	-0.801***	-0.844***	-0.814***
	(0.062)	(0.048)	(0.055)	(0.075)	(0.060)
Hispanic	-0.108***	-0.130***	-0.155***	0.087**	-0.514***
	(0.032)	(0.025)	(0.029)	(0.035)	(0.031)
Constant	-2.762***	-2.173***	-2.304***	-2.982***	-2.424***
	(0.043)	(0.033)	(0.036)	(0.046)	(0.040)
Observations	262,025	262,025	262,025	262,025	262,025
Log Likelihood	-56,205.350	-80,649.180	-66,128.830	-42,589.940	-67,820.560
Akaike Inf. Crit.	112,420.700	161,308.400	132,267.700	85,189.890	135,651.100
Note:					*p**p***p<0.01

health disabilities diminish. We know this because the spread of the coefficients is reduced, thus the points that represent the main racial groups get closer to each other. We deduce a reduction in overall racial disparities leading one to believe that sociodemographic traits explain some racial health disparities, although there are some exceptions. For example, in vision disabilities, Hispanics have a poorer health outcome than Blacks. Or when looking at hearing disabilities, Blacks have the least probability of poor hearing. Nonetheless, the rest of the results display similar output to typical research that explore variations in health, where minority groups like Blacks and Hispanics, tend to have poorer health compared to Whites.

Figure 3



As we note in the figure above,, the logit coefficients for each racial group are listed as White, Black, Asian, and Hispanic respectively, showing the major health disparities in main racial ethnic groups.

Figure 10 and *Figures 11-15* (Appendix pg. 41-43) show the heterogeneity in ancestral disability that is omitted by utilizing the main racial groupings. The figures demonstrate the proportional coefficients of all the created ancestral categories based on disabilities. Western Europeans through Other Whites will include Whites of different ancestry. North American Blacks through Other Black will include Blacks of different ancestry. Chinese to Japanese will include all those Asians with an ancestry of Asian. And the Mexican to Other Hispanic will group all individuals with a Hispanic ancestry. The five determined health measures are listed on the headers of *Figures 11-15* (Appendix pg. 41-43). *Figure 10* is the first Model with no controls, where *Figures 11-15* (Appendix pg.41-43) shows the graphical coefficients. While *Figure 16* (Appendix pg. 42-44) is controlled with the demographic and socioeconomic factors, where *Figures 17-21* (Appendix pg. 45-47) shows the graphical coefficients. The subgroups of

ancestry that have a positive value larger than 0 are more likely to have a disability. Those that are scored with a larger negative value are more likely to not have a disability. A complete table can be found below in the form of Stargazer *Figure 10 & Figure 16* (Appendix pg. 42-44).

We attempt to make comparisons on *Figure 10* and *Figures 11-15* (Appendix pg. 41-43) to determine aspects of ancestral health disparities. Since most figures have overlapping disparities, this indicates a strong heterogeneity between and within racial subgroups. Where the intra-racial health disparities tend to be greater than the inter-racial health disparities. In some situations, Black Central South Americans have the least likelihood of disabilities, while Black Europeans have the highest likelihood of disabilities. But when observing the Self-Care disability, Black Europeans have the highest positive significant coefficient out of all the Black subgroups. Additionally, other Hispanics have the highest coefficients for most disabilities, but in the case of hearing disabilities, Japanese and North American Whites have a higher coefficient than the other Hispanics. While the White and Asian subgroups tend to have less disabilities compared to Blacks and Hispanics, variations still exist within all subgroups. Moving on, we evaluate *Figure 16* (Appendix pg. 42-44) and *Figures 17-21* (Appendix pg. 45-47) which includes the additional demographic and socioeconomic factors. Similar to the previous Model 2, the variance in coefficients of the ancestral subgroups diminishes due to the added covariates. Observations of health disparities are found in all disability cases, particularly within the White and Black groups. There are more examples of disparities as when compared to Asian and Hispanic ancestry subgroups. The confidence interval for Black Central South Americans is especially large, which might be to a small sample size.

Figure 10

Logit Model 1, All Ancestry Subgroups No Covariates

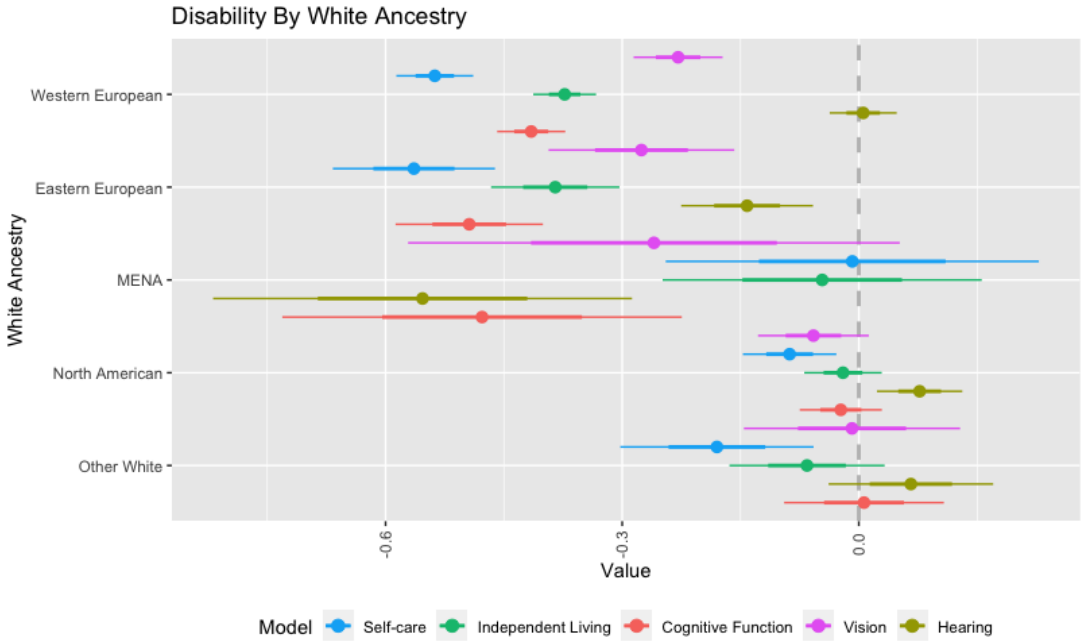
	Dependent variable:				
	Self-Care Disability	Independent Living Disability	Cognitive Function Disability	Vision Disability	Hearing Disability
	(1)	(2)	(3)	(4)	(5)
Western_Europeans_White	-0.662***	-0.520***	-0.639***	-0.396***	-0.022
	(0.023)	(0.018)	(0.020)	(0.027)	(0.020)
Eastern_Europeans_White	-0.672***	-0.526***	-0.734***	-0.482***	-0.190***
	(0.048)	(0.037)	(0.045)	(0.057)	(0.039)
Middle_Eastern_North_African_White	-0.356***	-0.405***	-0.828***	-0.549***	-0.746***
	(0.109)	(0.090)	(0.121)	(0.153)	(0.127)
North_American_White	-0.120***	-0.049**	-0.064***	-0.040	0.122***
	(0.028)	(0.022)	(0.025)	(0.034)	(0.025)
Other_White	-0.442***	-0.344***	-0.248***	-0.211***	-0.090*
	(0.058)	(0.045)	(0.049)	(0.067)	(0.049)
Black_NorthAmerican	0.211***	0.214***	0.228***	0.296***	-0.535***
	(0.032)	(0.026)	(0.029)	(0.039)	(0.040)
Black_African	-0.373***	-0.354***	-0.366***	-0.124	-1.200***
	(0.118)	(0.095)	(0.106)	(0.135)	(0.167)
Black_WestIndian	-0.314**	-0.436***	-0.509***	-0.250	-1.447***
	(0.123)	(0.106)	(0.122)	(0.153)	(0.203)
Black_Central_South_American	-1.657	-1.427**	-1.172	-1.113	-1.710*
	(1.008)	(0.718)	(0.719)	(1.008)	(1.008)
Black_European	0.294	0.240	0.146	0.418	-0.276
	(0.293)	(0.249)	(0.283)	(0.346)	(0.365)
Other_Black	-0.014	-0.260	-0.240	0.421*	-0.355
	(0.228)	(0.207)	(0.228)	(0.239)	(0.258)
Asian_Chinese	-0.922***	-0.758***	-1.042***	-1.154***	-0.870***
	(0.097)	(0.073)	(0.092)	(0.140)	(0.092)
Filipino	-1.031***	-0.611***	-0.813***	-0.608***	-0.684***
	(0.118)	(0.079)	(0.096)	(0.125)	(0.099)
Indian	-1.163***	-0.950***	-1.479***	-1.276***	-1.234***
	(0.133)	(0.097)	(0.138)	(0.182)	(0.134)
Vietnamese	-0.600***	-0.451***	-0.493***	-0.437***	-0.797***

	(0.131)	(0.099)	(0.113)	(0.156)	(0.140)
Korean	-0.516***	-0.671***	-0.781***	-0.881***	-1.092***
	(0.142)	(0.123)	(0.144)	(0.216)	(0.180)
Japanese	-0.185	-0.353***	-0.528***	-0.284	0.074
	(0.138)	(0.121)	(0.145)	(0.184)	(0.121)
Mexican	-0.518***	-0.460***	-0.503***	-0.042	-0.442***
	(0.042)	(0.033)	(0.037)	(0.044)	(0.039)
Puerto_Rican	-0.077	0.116*	0.089	0.253***	-0.473***
	(0.078)	(0.059)	(0.066)	(0.086)	(0.089)
Cuban	0.012	-0.058	-0.081	-0.026	-0.462***
	(0.095)	(0.080)	(0.090)	(0.122)	(0.113)
Central_American_Hispanic	-0.856***	-0.800***	-0.631***	-0.359***	-1.192***
	(0.118)	(0.092)	(0.096)	(0.121)	(0.134)
South_American_Hispanic	-1.200***	-0.887***	-1.058***	-0.551***	-0.986***
	(0.145)	(0.100)	(0.122)	(0.138)	(0.126)
Other_Hispanic	0.323***	0.325***	0.395***	0.382***	-0.020
	(0.096)	(0.080)	(0.085)	(0.116)	(0.106)
Constant	-2.486***	-2.007***	-2.262***	-3.030***	-2.433***
	(0.016)	(0.013)	(0.015)	(0.021)	(0.016)
Observations	262,025	262,025	262,025	262,025	262,025
Log Likelihood	-55,598.680	-79,984.290	-65,390.390	-42,437.900	-67,725.380
Akaike Inf. Crit.	111,245.400	160,016.600	130,828.800	84,923.800	135,498.800
Note:					*p**p***p<0.01

Some cases show how Black Central South Americans still tend to occupy the lowest rate of disabilities, yet the Black Europeans tend to have the highest rate of disabilities when comparing all ancestral groups. In the White category, White Eastern Europeans have the least likelihood of a cognitive function disability, where other Whites have the highest likelihood of a cognitive function disability. Demonstrating how health differences exist within both the Black and White groups. As for the other races, the Hispanic ancestral sub-groups show conflicting results in the case of the cognitive function disability, where we find Other Hispanics are much

more likely to have a disability compared to Southern American Hispanics. Even the Asian subgroup, which has the least amount of variation, still has health disparities that exist within them. The extreme variety of coefficients in health disabilities within and among ancestral/racial groups demonstrate that interpreting comparisons of subgroups are exceedingly difficult.

Figure 22 (This graph is all ancestral groups and covariates; however, we restrict our view only to the White racial group.)



Limitations

In our study, the size of sample is a limitation because the sample uses 15 percent of the ACS IPUMS data from the year 2019. Additionally, random sampling is used to create the subsample of 15% which may not accurately reflect individuals in each ethnic and ancestral category. This could produce bias since random observations are not weighted. Furthermore, the summary statistics may be skewed due to random sampling, not weighting samples, or the natural alterations in population patterns due to potential immigration/natality transitions.

Moving on, our analyses does not consist of poverty levels because interpretation of the recorded factor was undeterminable. Additionally, foreign born individuals are not utilized as a demographic variable in our study due to coding difficulties. Next, our study is not a time series, we collect data from a single year, whereas the previous study from Read, Lynch, and West uses data from, approximately 9 years, therefore the lack of additional years may cause bias. Additionally, available referenceable databases regarding intra-racial white diversification are limited, where historical censuses have generally been recorded decennially and have only recently been published on a yearly basis in the ACS (Read 2013). Utilizing the ACS dataset from 2019, we have the ability to segment by ancestry the uniform white racial group to inspect variation inside the overall White ethnic population. We recognize those with one disability would most likely be associated with having an additional disability, however it was not an area of thorough investigation. Unfortunately, the dataset does not provide historical material on parents reported ancestral origin, causing insufficiencies when looking at fluctuations from newer to old generations. Looking at disabilities is hard because the answers are recorded in a yes/no format, and do not elaborate to the extent of the disability. Finally, an interesting study would be to use other variables, such as self-reported health data, with respect to race/ethnicity and ancestry to contrast inconsistencies of disabilities (Read and Reynolds 2012).

Discussion and Conclusion

Moving forward, a key reason for those with higher educational attainment having a lower rate of health disabilities may lie in the opportunity cost. In other studies, immigrants with low education levels were more likely to report greater levels of disability (Elo et al. 2011). Indicating, those with lower levels of education may have a higher chance of reporting a disability due to potentially receiving more social/financial benefits. For example, individuals

that identified as disabled received disability insurance from the government (Altman 2017), suggesting a greater monetary benefit from identifying as disabled. Another example shows disabled adults prioritizing leisure over work compared to non-disabled adults (Shandra 2018) demonstrating greater social benefits because of the lower cost of leisure. "Individuals with disabilities experience lower education levels, lower employment rates, fewer household resources, and poorer health than people without disabilities" (Shandra 2018). Suggesting there is an opportunity cost for those with disabilities to lose out on the social safety net. This might explain why in some cases in our study people with higher educational levels are less likely to have a disability. Those with lower educational levels are better off claiming a disability since they may not be able to command a higher salary since there is a greater opportunity cost to work.

Some cases in our study showed Black Europeans, other Blacks and other Hispanics have higher rates of disability, which may be potentially due to discrimination. For example, anti-immigrant policies may negatively affect Latinos, where an adverse social environment could subject them to discrimination (Almeida 2016). Additionally, bias may exist within the labor force, through hiring opportunities where disabled people have a greater likelihood of not getting hired. (Ameri et al. 2018). "Yet, despite comprising more than one-eighth of the US population, people with disabilities are seldom integrated into sociological studies of inequality" (Shandra 2018). It is in our opinion that future health studies conducted should include people with health disabilities in order to represent health disparities more accurately.

Whites have traditionally been the main racial group compared to other racial groups when investigating health differences in the United States to quantify variation in health when looking at a group that is made up of most of the population versus a group that is made up of the

minority population. We find this consistency in studies when looking at comparisons between Whites and other large racial/ethnic groupings. Also, in more recent studies that have concentrated on inequalities within the non-Hispanic White class. The method of using Whites as a singular homogenous group neglects a number of significant demographic developments; using Whites as a reference group has complications (Read, Jen'nan Ghazal, et al. 2021). By 2040, whites are expected to be a minority group, so there is less purpose in using them as a reference group in population health studies, especially if health policies are influenced by other substantially bigger racial groups (Coleman 2006; Lichter 2013; Read, Jen'nan Ghazal, et al. 2021). The 1965 Immigration and Nationality Act greatly changed the demographics of America, potentially influencing the makeup of the White racial groups as well as developing a new immigration strategy focusing on bringing together immigrant families and drawing talented labor to the United States, changing the previous quota system of national origin (History.com Editors 2010). As a result, analyzing Whites as a whole obscures health disparities not only among Whites, as well as between Whites and other racial groups and ethnicities.

This analysis investigated the hypothesis that not segmenting within the White population and looking at a sole disability outcome is an error since there are observable differences in health inequalities of Whites. This is done by assessing the level of variability within White ancestry groups and comparing health developments among Whites to other large races and ethnicities. The findings call into question the widely held belief that Whites are a monolithic population. In several areas, health outcomes are observed where White people have more variety in their own group, rather than comparing Whites against other racial groups, when segmented by ancestry. The level of variety in disability among the White ancestry categories

was also significant, demonstrating that the grouping the White race in a monolithic group is not good way to obtain health outcomes of the White race.

When looking specifically at the White ancestry groups on **page 33**, they were composed differently in terms of health. The White ancestry group contained people of various socioeconomic backgrounds, as well as individuals with higher degree designations. Additionally, while some groups were essentially English proficient with US citizenship, other groups had a more diverse demographic profile. When analyzing just the White Ancestry group, North America and MENA ancestry groups had the least amount of high school diplomas; while Western European, North Americans, and other White have the highest level of no health insurance. North American, Eastern European and MENA categories, on the other hand, had greater bachelor's degree completion rates. The other White and Eastern European ancestry groups had the highest level of US citizenship. A higher number of people from Western Europe had low English language skills. Thus, revealing that not segmenting Whites and refereeing to them as a single group tends to disregard many of the complicated outcomes that affect them.

This paper demonstrates the value of segmenting data into groups, which is frequently disregarded in the burgeoning writings on health differences inside ethnic groups. In many studies, Whites are usually placed in a single group, where they are a benchmark against other groups. Nonetheless, we discovered that Whites are far from homogeneous, where non-European immigrants are a growing number of the group (Read and Reynolds 2012; Read, Jen'nan Ghazal, et al. 2021; National Academies of Sciences, Engineering, and Medicine, et al. 2015). Suggesting the health profiles of Whites merit more awareness, as more studies have become available revealing health inequalities among White people, for example Middle Easterners, Russians, or North Africans (Dallo and Kindratt 2015; Read, Jen'nan Ghazal, et al. 2021;

Reynolds et al. 2016). In our study, those of MENA heritage might have a higher propensity for disabilities given the turmoil and instability immigrants may have faced in these regions of origin.

The lack of extensive data resources limits the ability to disaggregate White ethnic subgroups, where the progress in dividing Whites has been hampered. Small sample sizes and data limitations create methodological hurdles. However, there are greater opportunities to take advantage of the research. With expanding research, there may potentially be data on White nativity, which could aid in distinguishing between foreign-born and native-born Whites. Therefore, helping to resolve inequality in the White population caused by non-Western European migration. Recognizing these possibilities is critical in increasing our knowledge of population health in the United States, specifically as the White population continually undergoes changes in the next few decades. The practice of utilizing Whites as the reference group arose during a period when the White demographic was more homogeneous (Read, Jen'nan Ghazal, et al. 2021), and future studies should consider this a possibility. Hence, grasping the causes of health inequalities among large racial groups may be more useful than assessing gaps between them.

Submit both GitHub links together

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IPUMS Data
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https://live.usa.datadownload.ipums.org/web/extracts/usa/1692160/usa_00001.cbk

Appendix

	White (N=40957)	Black (N=22544)	Asian (N=13450)	Hispanic (N=7547)	White W European Ancestry (N=17052)	White E European Ancestry (N=102847)	White MENA Ancestry (N=12429)	White N American Ancestry (N=1637)	Other White (N=30577)	Overall (N=262025)
Disability Self-Care										
FALSE	37664 (92.0%)	20593 (91.3%)	12954 (96.3%)	7157 (94.8%)	16186 (94.9%)	98611 (95.9%)	11925 (95.9%)	1548 (94.6%)	28483 (93.2%)	247390 (94.4%)
TRUE	3293 (8.0%)	1951 (8.7%)	496 (3.7%)	390 (5.2%)	866 (5.1%)	4236 (4.1%)	504 (4.1%)	89 (5.4%)	2094 (6.8%)	14635 (5.6%)
Disability Independent Living										
FALSE	35968 (87.8%)	19570 (86.8%)	12549 (93.3%)	6914 (91.6%)	15627 (91.6%)	95234 (92.6%)	11518 (92.7%)	1504 (91.9%)	27122 (88.7%)	237728 (90.7%)
TRUE	4989 (12.2%)	2974 (13.2%)	901 (6.7%)	633 (8.4%)	1425 (8.4%)	7613 (7.4%)	911 (7.3%)	133 (8.1%)	3455 (11.3%)	24297 (9.3%)
Disability Cognitive Thinking										
FALSE	37016 (90.4%)	20153 (89.4%)	12875 (95.7%)	7018 (93.0%)	16004 (93.9%)	97483 (94.8%)	11838 (95.2%)	1566 (95.7%)	27863 (91.1%)	243683 (93.0%)
TRUE	3941 (9.6%)	2391 (10.6%)	575 (4.3%)	529 (7.0%)	1048 (6.1%)	5364 (5.2%)	591 (4.8%)	71 (4.3%)	2714 (8.9%)	18342 (7.0%)
Disability Vision										
FALSE	39122 (95.5%)	21240 (94.2%)	13167 (97.9%)	7208 (95.5%)	16327 (95.7%)	99596 (96.8%)	12065 (97.1%)	1593 (97.3%)	29226 (95.6%)	251924 (96.1%)
TRUE	1835 (4.5%)	1304 (5.8%)	283 (2.1%)	339 (4.5%)	725 (4.3%)	3251 (3.2%)	364 (2.9%)	44 (2.7%)	1351 (4.4%)	10101 (3.9%)
Disability Hearing										
FALSE	37455 (91.4%)	21476 (95.3%)	12945 (96.2%)	7190 (95.3%)	16201 (95.0%)	94733 (92.1%)	11590 (93.2%)	1571 (96.0%)	27828 (91.0%)	242965 (92.7%)
TRUE	3502 (8.6%)	1068 (4.7%)	505 (3.8%)	357 (4.7%)	851 (5.0%)	8114 (7.9%)	839 (6.8%)	66 (4.0%)	2749 (9.0%)	19060 (7.3%)
AGE										
Mean (SD)	61.6 (13.6)	59.9 (12.3)	57.9 (12.6)	55.3 (11.6)	57.3 (12.5)	62.6 (12.4)	62.5 (12.8)	59.0 (12.8)	62.2 (12.7)	61.2 (12.8)
Median [Min, Max]	60.0 [40.0, 96.0]	59.0 [40.0, 95.0]	56.0 [40.0, 95.0]	53.0 [40.0, 95.0]	55.0 [40.0, 95.0]	62.0 [40.0, 96.0]	62.0 [40.0, 96.0]	57.0 [40.0, 95.0]	62.0 [40.0, 96.0]	60.0 [40.0, 96.0]
SEX										
Mean (SD)	1.52 (0.499)	1.55 (0.497)	1.56 (0.496)	1.52 (0.500)	1.53 (0.499)	1.52 (0.500)	1.53 (0.499)	1.47 (0.499)	1.53 (0.499)	1.53 (0.499)
Median [Min, Max]	2.00 [1.00, 2.00]	2.00 [1.00, 2.00]	2.00 [1.00, 2.00]	2.00 [1.00, 2.00]	2.00 [1.00, 2.00]	2.00 [1.00, 2.00]	2.00 [1.00, 2.00]	1.00 [1.00, 2.00]	2.00 [1.00, 2.00]	2.00 [1.00, 2.00]
Married										
Mean (SD)	0.606 (0.489)	0.408 (0.492)	0.750 (0.433)	0.592 (0.492)	0.621 (0.485)	0.665 (0.472)	0.665 (0.472)	0.712 (0.453)	0.632 (0.482)	0.627 (0.484)
Median [Min, Max]	1.00 [0, 1.00]	0 [0, 1.00]	1.00 [0, 1.00]	1.00 [0, 1.00]	1.00 [0, 1.00]	1.00 [0, 1.00]	1.00 [0, 1.00]	1.00 [0, 1.00]	1.00 [0, 1.00]	1.00 [0, 1.00]
Seperated/Divorced										
Mean (SD)	0.170 (0.376)	0.237 (0.425)	0.0920 (0.289)	0.184 (0.387)	0.177 (0.382)	0.156 (0.362)	0.148 (0.355)	0.130 (0.336)	0.174 (0.379)	0.167 (0.373)
Median [Min, Max]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]
Widowed										
Mean (SD)	0.123 (0.329)	0.110 (0.313)	0.0771 (0.267)	0.0645 (0.246)	0.0745 (0.263)	0.0966 (0.295)	0.0989 (0.299)	0.0825 (0.275)	0.110 (0.313)	0.0996 (0.299)
Median [Min, Max]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]
Never Married/Single										
Mean (SD)	0.100 (0.300)	0.245 (0.430)	0.0809 (0.273)	0.160 (0.366)	0.128 (0.334)	0.0827 (0.275)	0.0879 (0.283)	0.0764 (0.266)	0.0828 (0.276)	0.106 (0.308)
Median [Min, Max]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]
Northeast Region										
Yes	6493 (15.9%)	3428 (15.2%)	2566 (19.1%)	1266 (16.8%)	1743 (10.2%)	21926 (21.3%)	3886 (31.3%)	355 (21.7%)	3570 (11.7%)	47097 (18.0%)
No	34464 (84.1%)	19116 (84.8%)	10884 (80.9%)	6281 (83.2%)	15309 (89.8%)	80921 (78.7%)	8543 (68.7%)	1282 (78.3%)	27007 (88.3%)	214928 (82.0%)
Midwest Region										
Yes	10162 (24.8%)	3503 (15.5%)	1097 (8.2%)	552 (7.3%)	1085 (6.4%)	27229 (26.5%)	3646 (29.3%)	258 (15.8%)	6291 (20.6%)	56268 (21.5%)
No	30795 (75.2%)	19041 (84.5%)	12353 (91.8%)	6995 (92.7%)	15967 (93.6%)	75618 (73.5%)	8783 (70.7%)	1379 (84.2%)	24286 (79.4%)	205757 (78.5%)
South Region										
Yes	16673 (40.7%)	13604 (60.3%)	2857 (21.2%)	1917 (25.4%)	7924 (46.5%)	32786 (31.9%)	2784 (22.4%)	424 (25.9%)	15803 (51.7%)	99682 (38.0%)
No	24284 (59.3%)	8940 (39.7%)	10593 (78.8%)	5630 (74.6%)	9128 (53.5%)	70061 (68.1%)	9645 (77.6%)	1213 (74.1%)	14774 (48.3%)	162343 (62.0%)
West Region										
Yes	7629 (18.6%)	2009 (8.9%)	6930 (51.5%)	3812 (50.5%)	6300 (36.9%)	20906 (20.3%)	2113 (17.0%)	600 (36.7%)	4913 (16.1%)	58978 (22.5%)
No	33328 (81.4%)	20535 (91.1%)	6520 (48.5%)	3735 (49.5%)	10752 (63.1%)	81941 (79.7%)	10316 (83.0%)	1037 (63.3%)	25664 (83.9%)	203047 (77.5%)
Less Than High School Diploma										
Yes	4427 (10.8%)	3592 (15.9%)	2029 (15.1%)	3091 (41.0%)	5431 (31.8%)	5000 (4.9%)	542 (4.4%)	182 (11.1%)	3660 (12.0%)	29275 (11.2%)
No	36530 (89.2%)	18952 (84.1%)	11421 (84.9%)	4456 (59.0%)	11621 (68.2%)	97847 (95.1%)	11887 (95.6%)	1455 (88.9%)	26917 (88.0%)	232750 (88.8%)
High School Diploma										
Yes	13992 (34.2%)	7168 (31.8%)	2201 (16.4%)	2036 (27.0%)	4418 (25.9%)	26192 (25.5%)	3058 (24.6%)	282 (17.2%)	11357 (37.1%)	74200 (28.3%)
No	26965 (65.8%)	15376 (68.2%)	11249 (83.6%)	5511 (73.0%)	12634 (74.1%)	76655 (74.5%)	9371 (75.4%)	1355 (82.8%)	19220 (62.9%)	187825 (71.7%)
Some College/Associates Degree										
Yes	10975 (26.8%)	6939 (30.8%)	2511 (18.7%)	1557 (20.6%)	4004 (23.5%)	32004 (31.1%)	3382 (27.2%)	340 (20.8%)	8647 (28.3%)	74424 (28.4%)
No	29982 (73.2%)	15605 (69.2%)	10939 (81.3%)	5990 (79.4%)	13048 (76.5%)	70843 (68.9%)	9047 (72.8%)	1297 (79.2%)	21930 (71.7%)	187601 (71.6%)
Bachelor's Degree or Higher										
Yes	11563 (28.2%)	4845 (21.5%)	6709 (49.9%)	863 (11.4%)	3199 (18.8%)	39651 (38.6%)	5447 (43.8%)	833 (50.9%)	6913 (22.6%)	84126 (32.1%)
No	29394 (71.8%)	17699 (78.5%)	6741 (50.1%)	6684 (88.6%)	13853 (81.2%)	63196 (61.4%)	6982 (56.2%)	804 (49.1%)	23664 (77.4%)	177899 (67.9%)
No Health Inusrance										
Mean (SD)	0.0528 (0.224)	0.0871 (0.282)	0.0526 (0.223)	0.189 (0.392)	0.160 (0.367)	0.0349 (0.184)	0.0316 (0.175)	0.0611 (0.240)	0.0603 (0.238)	0.0606 (0.239)
Median [Min, Max]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]
Limited English Proficiency										
Mean (SD)	0.00435 (0.0658)	0.00980 (0.0985)	0.174 (0.379)	0.155 (0.362)	0.154 (0.361)	0.00350 (0.0591)	0.0374 (0.190)	0.127 (0.333)	0.00206 (0.0453)	0.0302 (0.171)
Median [Min, Max]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]
Not a U.S. Citizen										
Mean (SD)	0.00850 (0.0918)	0.0293 (0.169)	0.207 (0.405)	0.306 (0.461)	0.233 (0.423)	0.0116 (0.107)	0.0267 (0.161)	0.130 (0.336)	0.00752 (0.0864)	0.0470 (0.212)
Median [Min, Max]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]

Figure 4

Model 2, Major Racial Groups with Covariant

	Dependent variable:				
	Self-Care Disability	Independent Living Disability	Cognitive Function Disability	Vision Disability	Hearing Disability
	(1)	(2)	(3)	(4)	(5)
White	-0.223***	-0.246***	-0.282***	-0.355***	-0.266***
	(0.046)	(0.037)	(0.038)	(0.047)	(0.043)
Black	0.105**	-0.025	-0.145***	-0.061	-0.799***
	(0.052)	(0.042)	(0.044)	(0.056)	(0.053)
Asian	-0.302***	-0.260***	-0.479***	-0.643***	-0.725***
	(0.068)	(0.053)	(0.059)	(0.078)	(0.064)
Hispanic	-0.062*	-0.141***	-0.257***	0.049	-0.324***
	(0.037)	(0.030)	(0.032)	(0.040)	(0.036)
AGE	-0.078***	-0.128***	-0.130***	-0.046***	0.018***
	(0.006)	(0.005)	(0.005)	(0.007)	(0.006)
I(AGE2)	0.001***	0.001***	0.001***	0.001***	0.0004***
	(0.00004)	(0.00004)	(0.00004)	(0.00005)	(0.00004)
SEX	0.019	0.159***	-0.045***	-0.084***	-0.792***
	(0.019)	(0.015)	(0.017)	(0.022)	(0.017)
Married	-1.357***	-1.363***	-1.425***	-0.700***	-0.119***
	(0.027)	(0.022)	(0.023)	(0.033)	(0.031)
Seperated_Divorced	-0.609***	-0.634***	-0.535***	-0.108***	0.079**
	(0.030)	(0.025)	(0.025)	(0.036)	(0.035)
Widowed	-0.771***	-0.764***	-0.777***	-0.221***	0.064*
	(0.033)	(0.028)	(0.030)	(0.041)	(0.036)
Northeast	-0.077***	-0.090***	-0.140***	-0.209***	-0.253***
	(0.029)	(0.024)	(0.027)	(0.036)	(0.027)
Midwest	-0.058**	-0.047**	-0.042*	-0.100***	-0.107***
	(0.029)	(0.023)	(0.025)	(0.033)	(0.025)
South	-0.015	0.033	0.024	0.138***	0.036*
	(0.025)	(0.021)	(0.022)	(0.028)	(0.022)
HS	-0.506***	-0.556***	-0.606***	-0.393***	-0.283***
	(0.025)	(0.021)	(0.022)	(0.029)	(0.025)
Some_college	-0.776***	-0.891***	-0.960***	-0.610***	-0.312***
	(0.028)	(0.023)	(0.024)	(0.032)	(0.026)

Bachelor_Higher	-1.327***	-1.481***	-1.576***	-1.091***	-0.722***
	(0.031)	(0.025)	(0.028)	(0.035)	(0.027)
No_Insurance	-0.780***	-0.694***	-0.345***	0.132***	-0.044
	(0.059)	(0.043)	(0.038)	(0.046)	(0.047)
Linguistic_Isolation	-0.153***	-0.077*	-0.094*	0.026	-0.217***
	(0.056)	(0.044)	(0.050)	(0.060)	(0.055)
Not_Citizen	-0.415***	-0.418***	-0.784***	-0.405***	-0.416***
	(0.060)	(0.046)	(0.055)	(0.063)	(0.059)
Constant	-0.587***	1.534***	2.643***	-1.686***	-3.711***
	(0.207)	(0.164)	(0.164)	(0.227)	(0.211)
Observations	262,025	262,025	262,025	262,025	262,025
Log Likelihood	-47,143.950	-66,158.570	-58,611.990	-39,369.960	-57,872.470
Akaike Inf. Crit.	94,327.900	132,357.100	117,264.000	78,779.930	115,784.900
Note:					*p**p***p<0.01

Figure 5

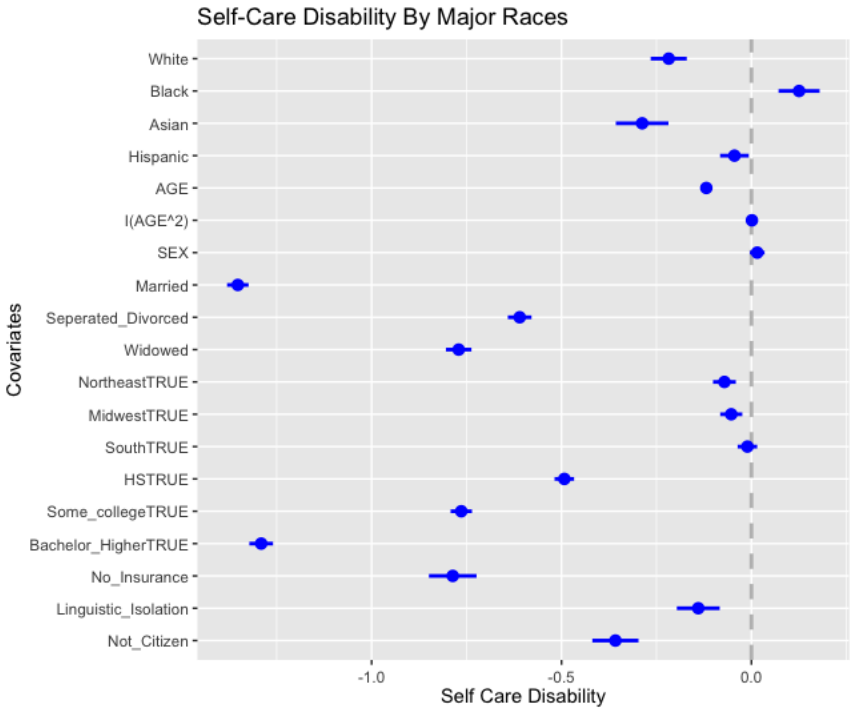


Figure 6

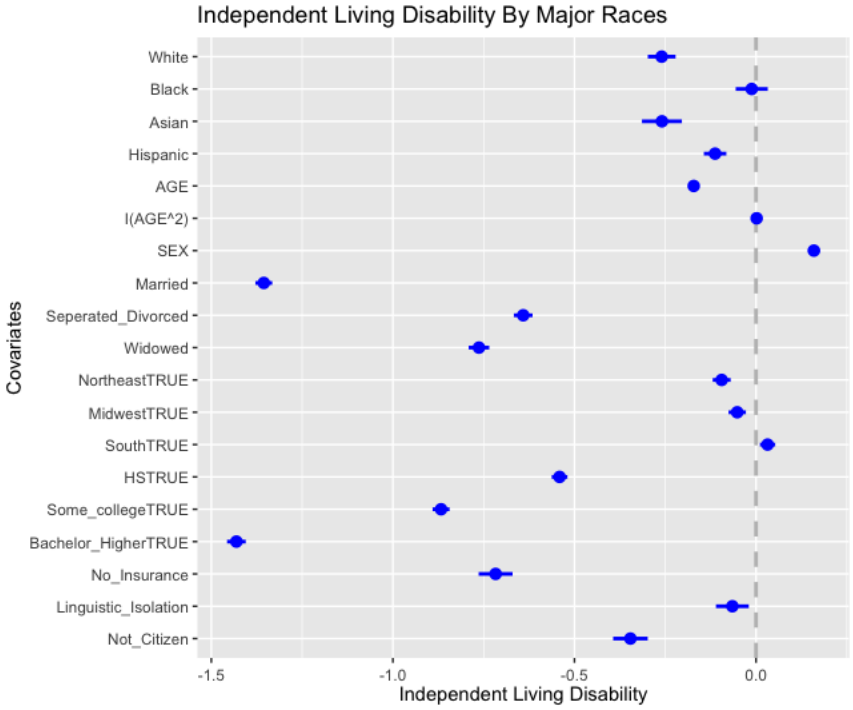


Figure 7

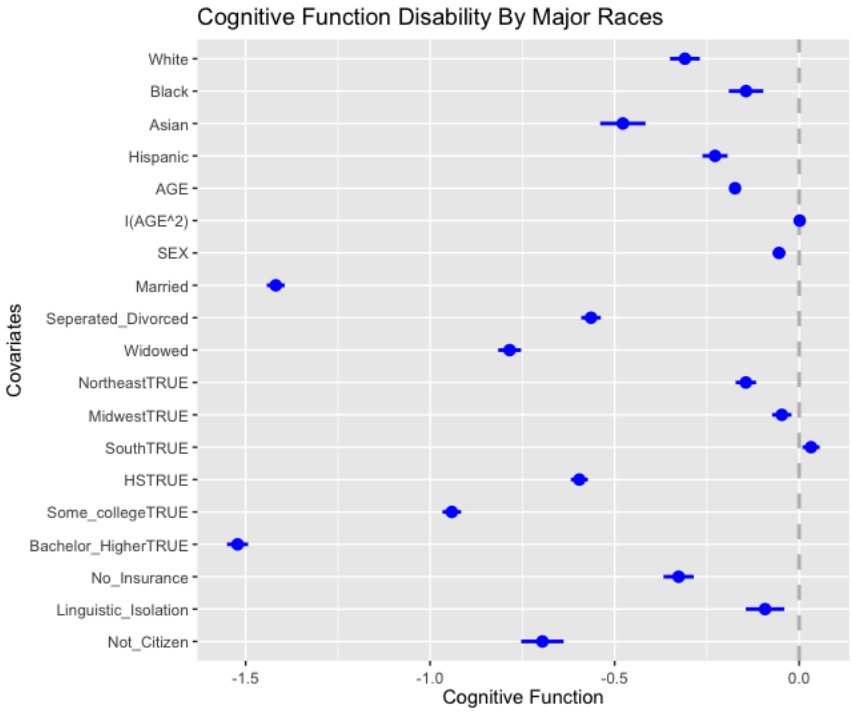


Figure 8

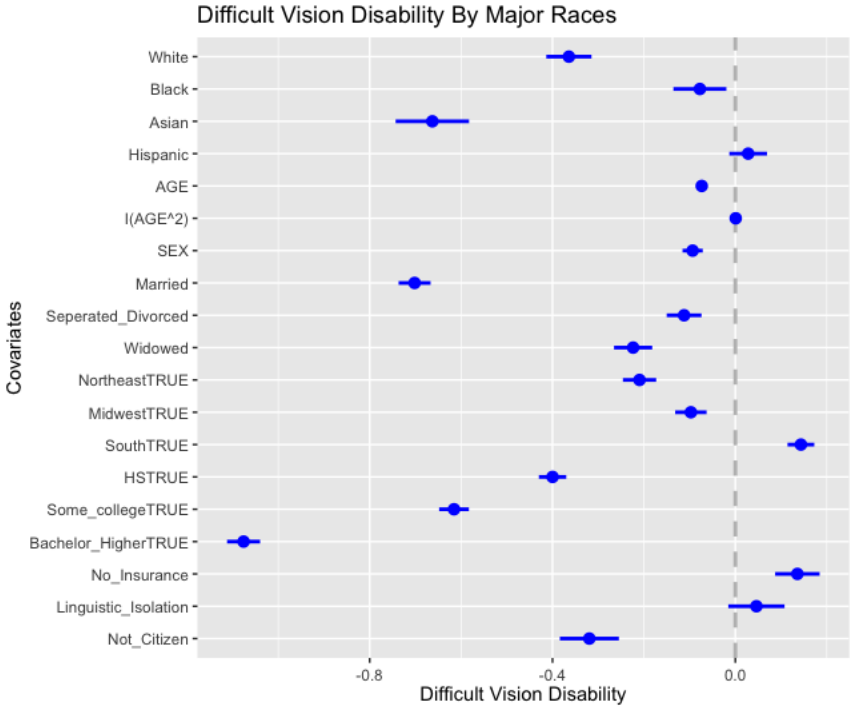


Figure 9

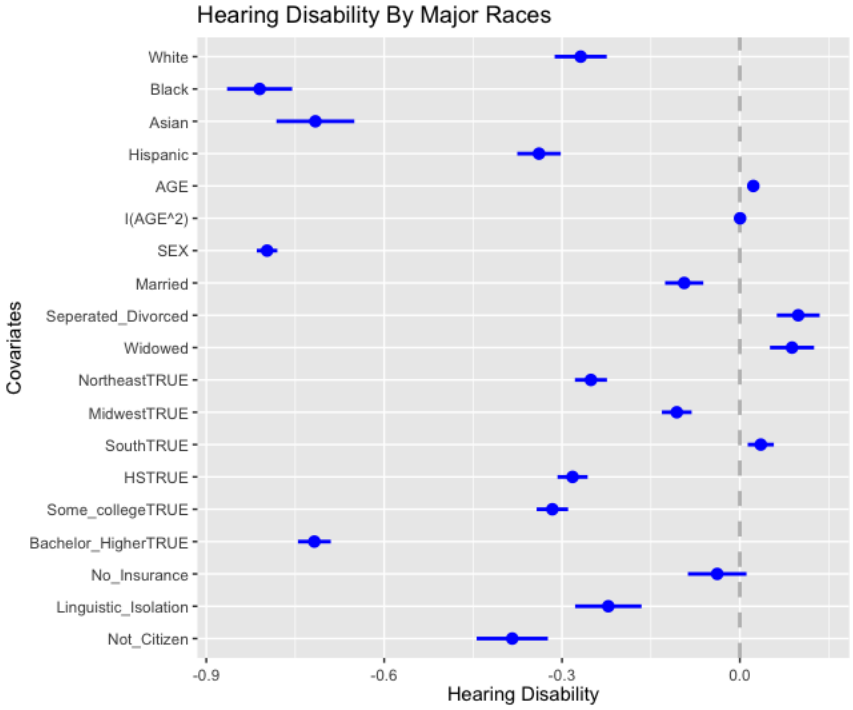


Figure 11

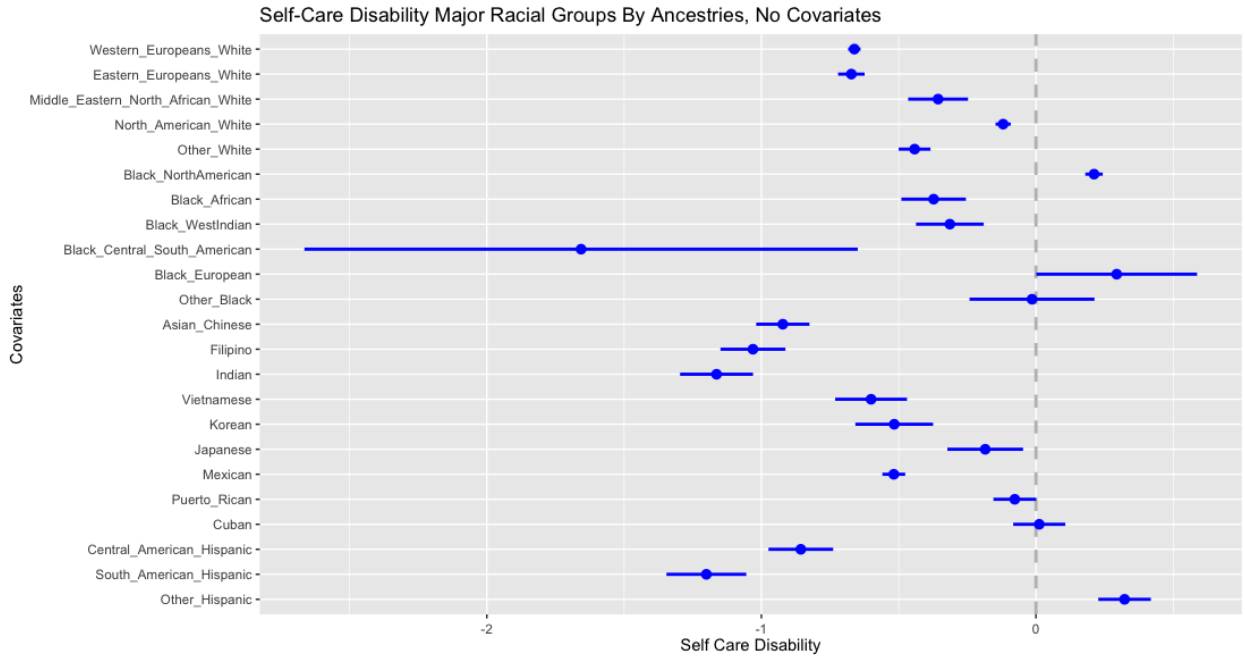


Figure 12

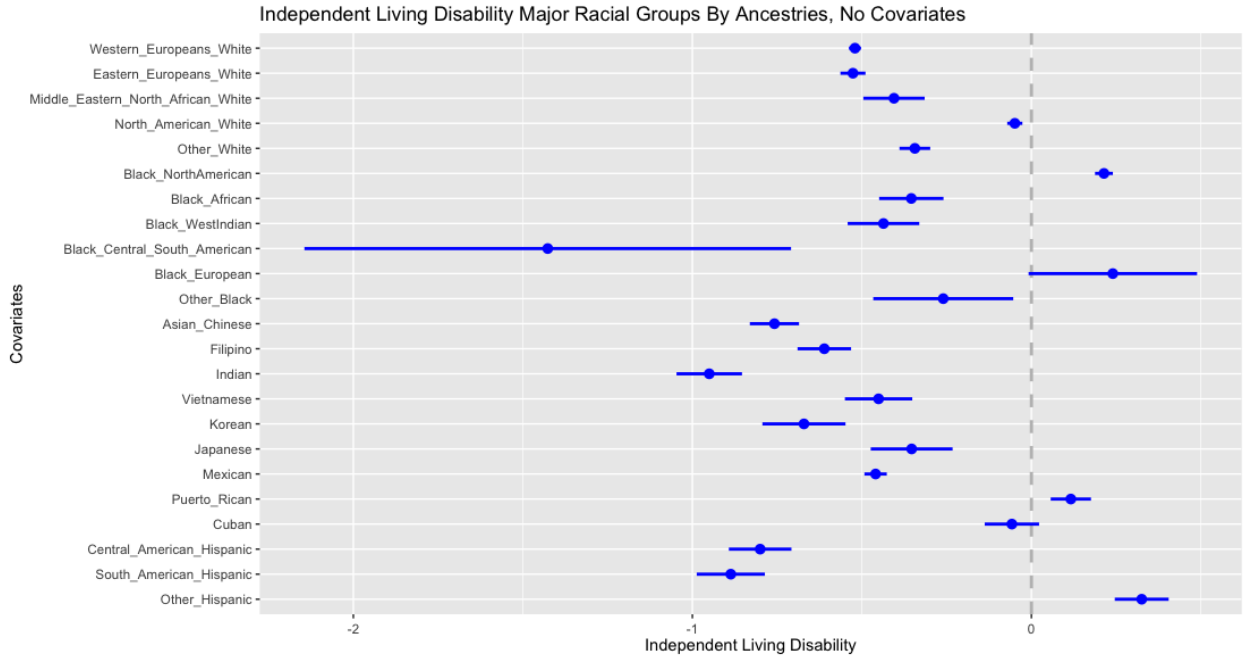


Figure 13

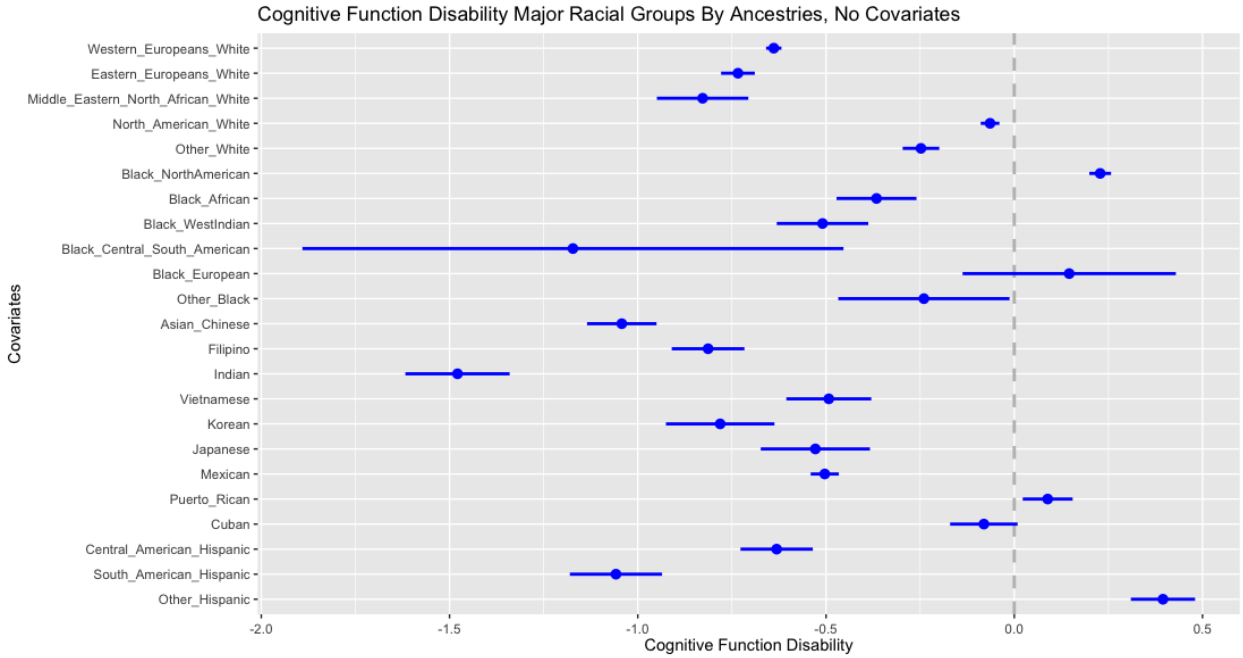


Figure 14

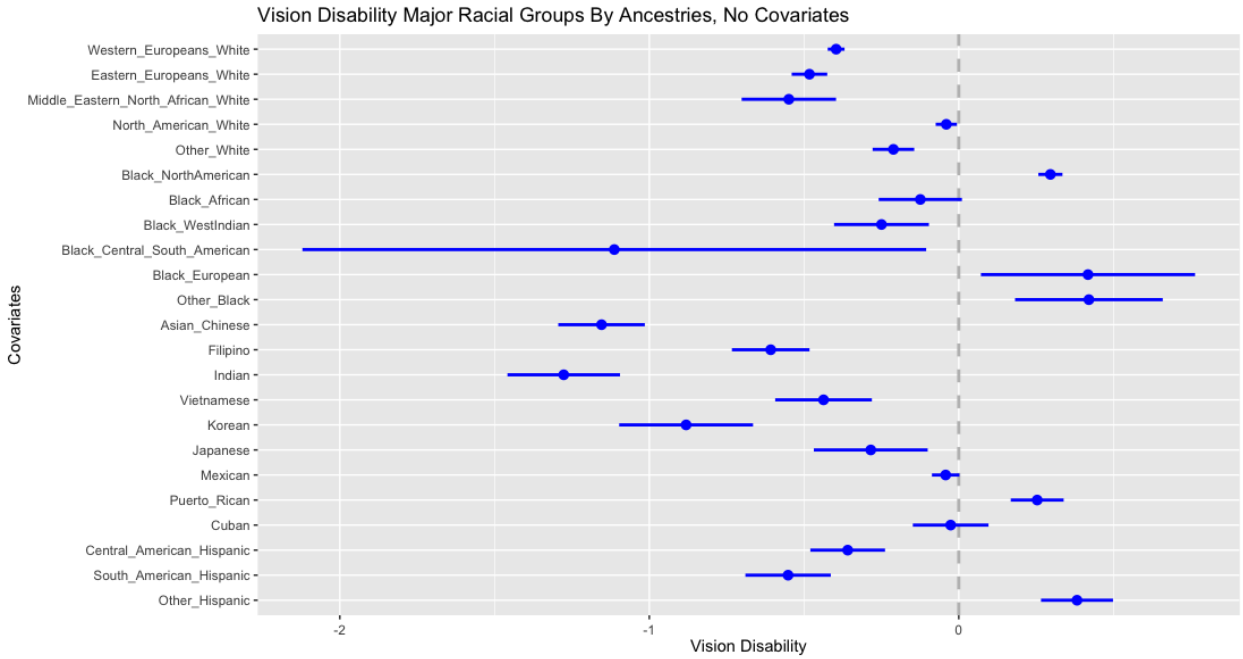


Figure 15

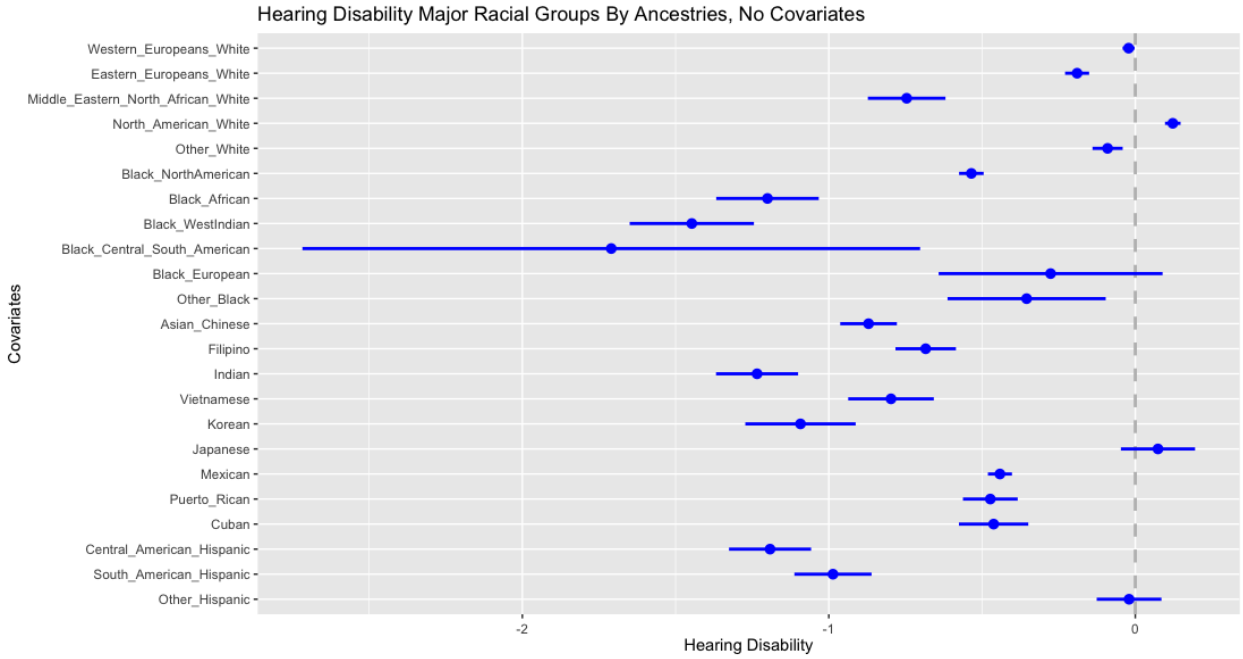

Hearing Disability Major Racial Groups By Ancestries, No Covariates
Western_Europeans_White
Eastern_Europeans_White
Middle_Eastern_North_African_White
North_American_White
Other_White
Black_NorthAmerican
Black_African
Black_WestIndian
Black_Central_South_American
Black_European
Other_Black
Asian_Chinese
Filipino
Indian
Vietnamese
Korean
Japanese
Mexican
Puerto_Rican
Cuban
Central_American_Hispanic
South_American_Hispanic
Other_Hispanic
Covariates
-2
-1
0
Hearing Disability

Figure 16

Logit Model 2, All Ancestry Subgroups and Covariates

	Dependent variable:				
	Self-Care Disability	Independent Living Disability	Cognitive Function Disability	Vision Disability	Hearing Disability
	(1)	(2)	(3)	(4)	(5)
Western_Europeans_White	-0.538***	-0.373***	-0.415***	-0.229***	0.006
	(0.024)	(0.020)	(0.022)	(0.028)	(0.021)
Eastern_Europeans_White	-0.564***	-0.385***	-0.494***	-0.276***	-0.142***
	(0.051)	(0.041)	(0.047)	(0.059)	(0.042)
Middle_Eastern_North_African_White	-0.008	-0.046	-0.478***	-0.260*	-0.553***
	(0.118)	(0.101)	(0.127)	(0.156)	(0.133)
North_American_White	-0.088***	-0.020	-0.023	-0.058	0.077***
	(0.030)	(0.025)	(0.026)	(0.035)	(0.027)
Other_White	-0.180***	-0.066	0.007	-0.009	0.066
	(0.061)	(0.049)	(0.051)	(0.069)	(0.052)
Black_NorthAmerican	0.144***	0.128***	0.029	0.196***	-0.516***
	(0.035)	(0.029)	(0.031)	(0.040)	(0.042)
Black_African	0.062	0.057	-0.136	0.144	-0.781***
	(0.123)	(0.101)	(0.110)	(0.137)	(0.171)
Black_WestIndian	-0.301**	-0.468***	-0.504***	-0.163	-1.257***
	(0.133)	(0.116)	(0.127)	(0.157)	(0.208)
Black_Central_South_American	-1.862*	-1.675**	-1.237*	-1.012	-1.681
	(1.048)	(0.783)	(0.743)	(1.021)	(1.038)
Black_European	0.284	0.212	0.010	0.447	-0.026
	(0.310)	(0.267)	(0.294)	(0.353)	(0.388)
Other_Black	0.114	-0.217	-0.369	0.465*	-0.022
	(0.240)	(0.220)	(0.235)	(0.244)	(0.272)
Asian_Chinese	-0.587***	-0.441***	-0.656***	-0.847***	-0.563***
	(0.105)	(0.082)	(0.098)	(0.144)	(0.099)
Filipino	-0.613***	-0.152*	-0.329***	-0.204	-0.300***
	(0.125)	(0.086)	(0.101)	(0.128)	(0.104)
Indian	-0.305**	-0.085	-0.647***	-0.588***	-0.633***
	(0.138)	(0.103)	(0.142)	(0.184)	(0.138)

Vietnamese	-0.352**	-0.269**	-0.346***	-0.316**	-0.542***
	(0.140)	(0.109)	(0.119)	(0.161)	(0.147)
Korean	-0.163	-0.374***	-0.396***	-0.599***	-0.832***
	(0.156)	(0.138)	(0.153)	(0.221)	(0.190)
Japanese	-0.356**	-0.567***	-0.482***	-0.280	-0.054
	(0.151)	(0.137)	(0.154)	(0.190)	(0.131)
Mexican	-0.303***	-0.326***	-0.483***	0.011	-0.152***
	(0.047)	(0.038)	(0.042)	(0.049)	(0.044)
Puerto_Rican	-0.062	0.145**	-0.013	0.300***	-0.270***
	(0.084)	(0.066)	(0.070)	(0.089)	(0.095)
Cuban	-0.073	-0.214**	-0.139	-0.232*	-0.606***
	(0.106)	(0.093)	(0.097)	(0.128)	(0.122)
Central_American_Hispanic	-0.550***	-0.603***	-0.524***	-0.222*	-0.686***
	(0.125)	(0.100)	(0.101)	(0.125)	(0.139)
South_American_Hispanic	-0.823***	-0.549***	-0.701***	-0.274*	-0.564***
	(0.152)	(0.109)	(0.127)	(0.141)	(0.131)
Other_Hispanic	0.213**	0.195**	0.201**	0.232*	-0.042
	(0.104)	(0.089)	(0.091)	(0.120)	(0.113)
AGE	-0.074***	-0.126***	-0.126***	-0.044***	0.017***
	(0.006)	(0.005)	(0.005)	(0.007)	(0.006)
I(AGE2)	0.001***	0.001***	0.001***	0.001***	0.0004***
	(0.00004)	(0.00004)	(0.00004)	(0.00005)	(0.00004)
SEX	0.016	0.159***	-0.049***	-0.085***	-0.794***
	(0.019)	(0.015)	(0.017)	(0.022)	(0.017)
Married	-1.329***	-1.343***	-1.401***	-0.693***	-0.112***
	(0.028)	(0.022)	(0.023)	(0.033)	(0.031)
Seperated_Divorced	-0.601***	-0.629***	-0.528***	-0.105***	0.083**
	(0.030)	(0.025)	(0.025)	(0.036)	(0.035)
Widowed	-0.757***	-0.757***	-0.765***	-0.220***	0.068*
	(0.033)	(0.028)	(0.030)	(0.041)	(0.036)
Northeast	-0.043	-0.084***	-0.128***	-0.198***	-0.236***
	(0.030)	(0.025)	(0.027)	(0.036)	(0.027)
Midwest	-0.057**	-0.059**	-0.049*	-0.108***	-0.103***
	(0.029)	(0.023)	(0.025)	(0.034)	(0.025)
South	-0.068***	-0.021	-0.037*	0.112***	0.026
	(0.026)	(0.021)	(0.022)	(0.029)	(0.022)

HS	-0.476***	-0.535***	-0.582***	-0.388***	-0.277***
	(0.025)	(0.021)	(0.022)	(0.029)	(0.025)
Some_college	-0.702***	-0.839***	-0.900***	-0.588***	-0.299***
	(0.028)	(0.023)	(0.024)	(0.032)	(0.026)
Bachelor_Higher	-1.228***	-1.412***	-1.488***	-1.059***	-0.699***
	(0.031)	(0.025)	(0.028)	(0.036)	(0.028)
No_Insurance	-0.778***	-0.689***	-0.337***	0.138***	-0.040
	(0.059)	(0.043)	(0.038)	(0.046)	(0.047)
Linguistic_Isolation	-0.138**	-0.044	-0.078	0.072	-0.154***
	(0.057)	(0.045)	(0.051)	(0.061)	(0.056)
Not_Citizen	-0.334***	-0.325***	-0.680***	-0.332***	-0.392***
	(0.060)	(0.047)	(0.056)	(0.063)	(0.059)
Constant	-0.724***	1.369***	2.429***	-1.953***	-3.967***
	(0.204)	(0.162)	(0.161)	(0.224)	(0.208)
Observations	262,025	262,025	262,025	262,025	262,025
Log Likelihood	-46,814.970	-65,871.870	-58,319.360	-39,333.480	-57,851.480
Akaike Inf. Crit.	93,707.940	131,821.700	116,716.700	78,744.960	115,781.000
Note:					*p**p***p<0.01

Figure 17

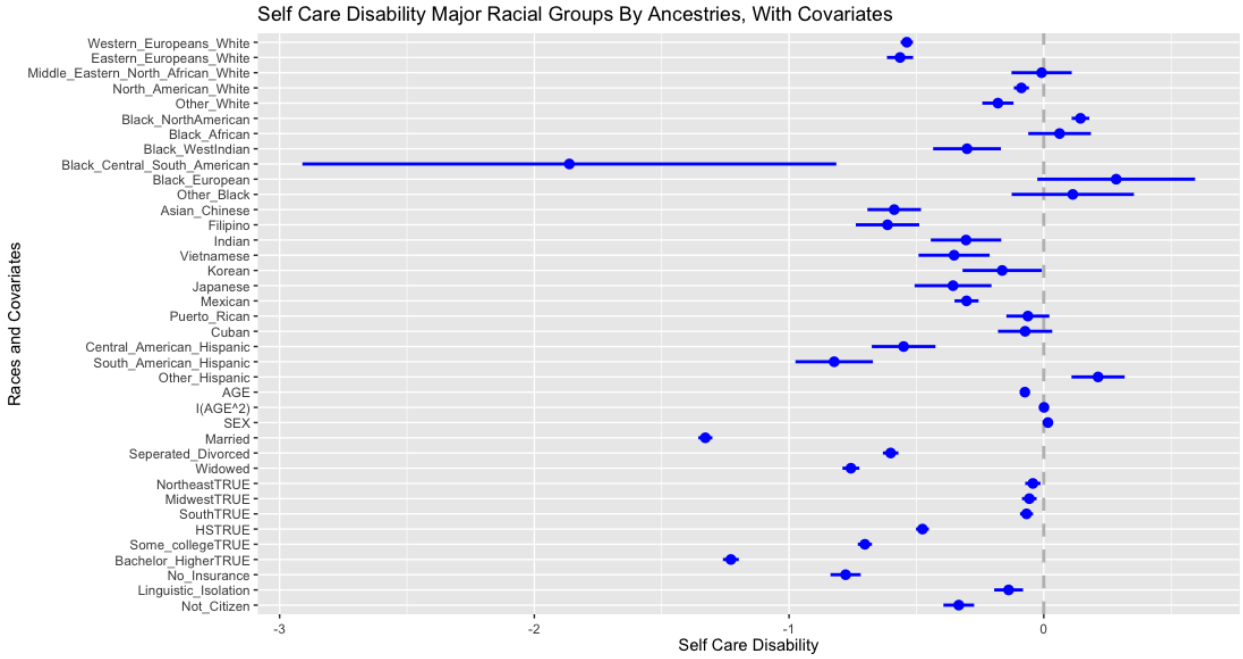


Figure 18

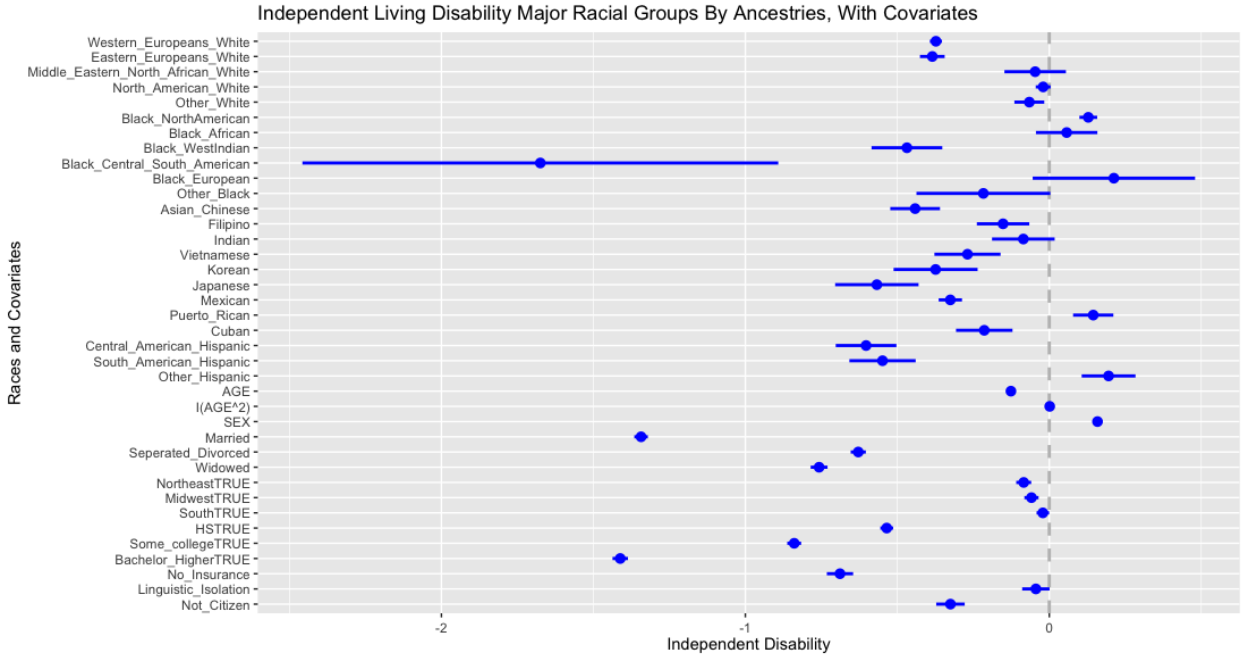


Figure 19

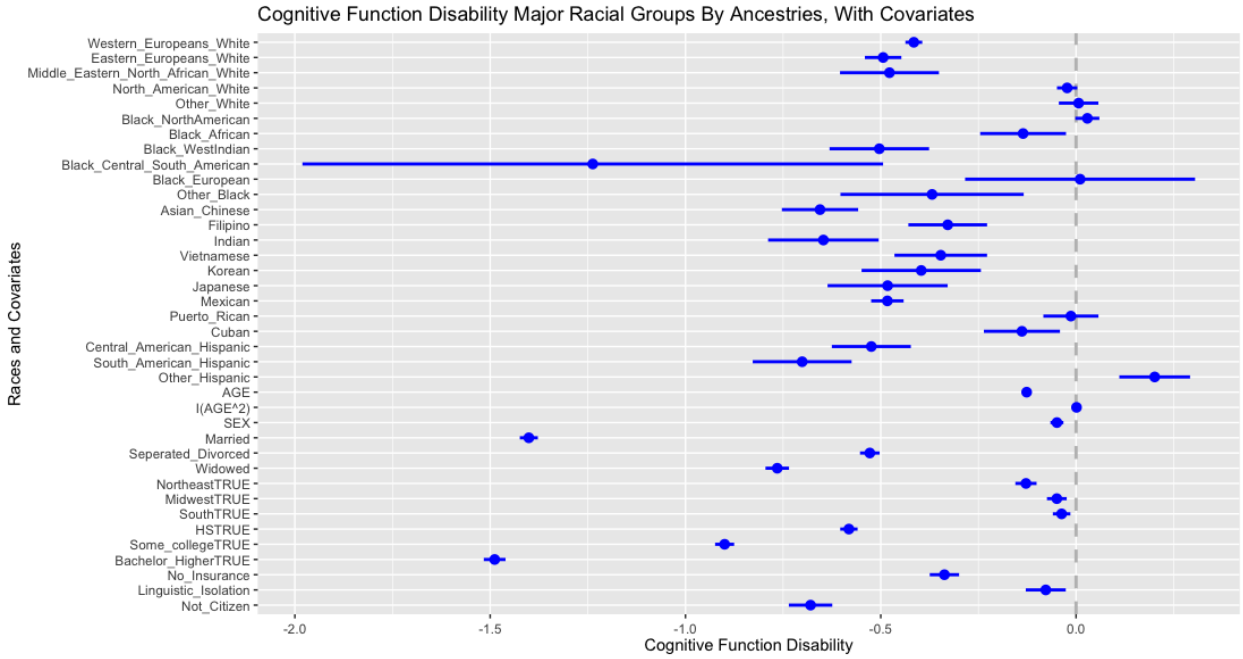


Figure 20

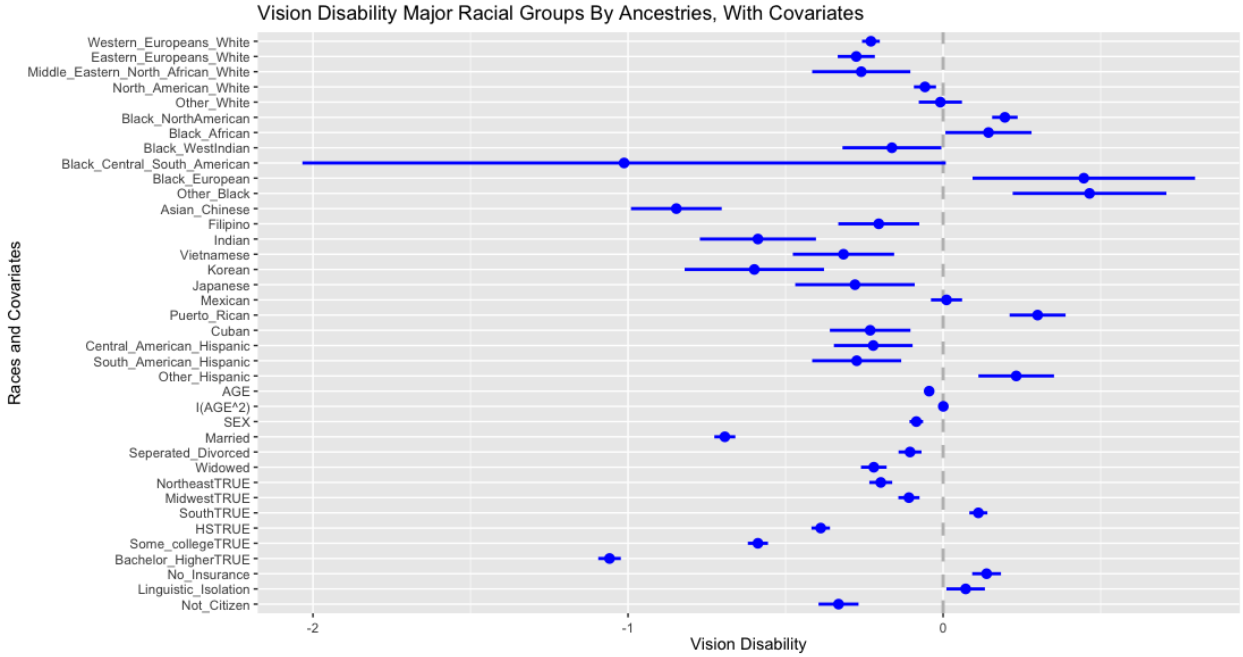


Figure 21

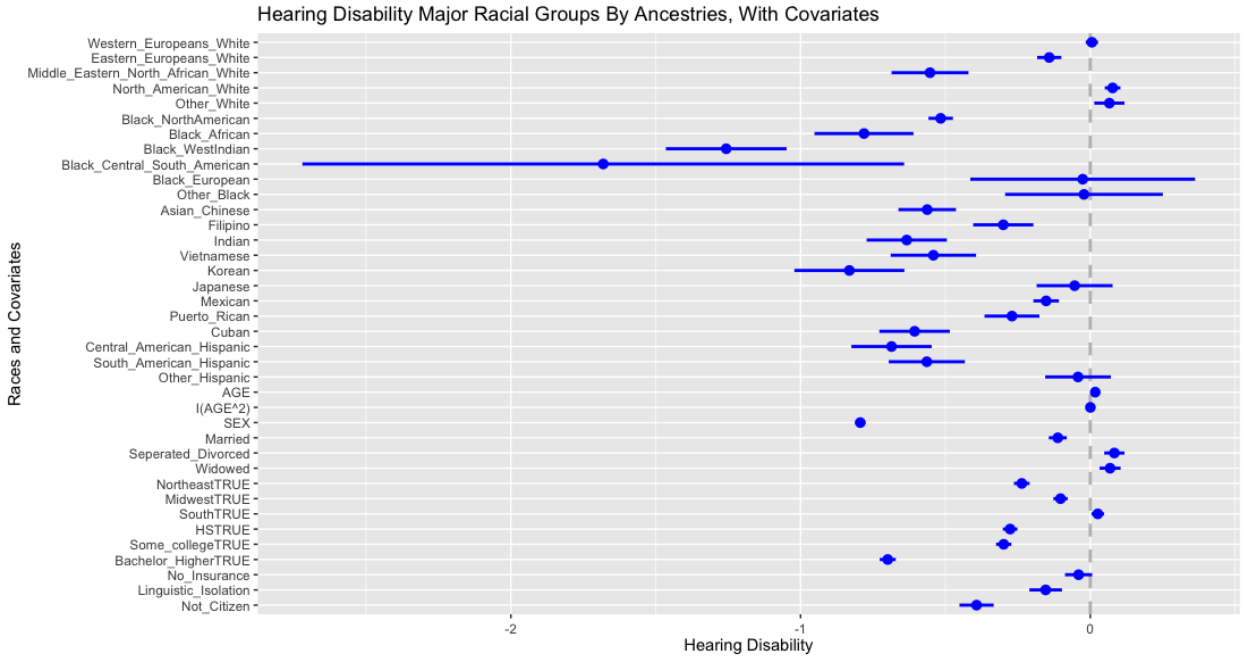

Hearing Disability Major Racial Groups By Ancestries, With Covariates
Western_Europeans_White
Eastern_Europeans_White
Middle_Eastern_North_African_White
North_American_White
Other_White
Black_NorthAmerican
Black_African
Black_WestIndian
Black_Central_South_American
Black_European
Other_Black
Asian_Chinese
Filipino
Indian
Vietnamese
Korean
Japanese
Mexican
Puerto_Rican
Cuban
Central_American_Hispanic
South_American_Hispanic
Other_Hispanic
AGE
I(AGE^2)
SEX
Married
Seperated_Divorced
Widowed
NortheastTRUE
MidwestTRUE
SouthTRUE
HSTRUE
Some_collegeTRUE
Bachelor_HigherTRUE
No_Insurance
Linguistic_Isolation
Not_Citizen
Races and Covariates
-2
-1
0
Hearing Disability

Figure 23

	Black North American (N=17269)	Black_African (N=1231)	Black West Indian (N=64)	Black Central South American (N=124)	Black_European (N=273)	Other_Black (N=3516)	Korean (N=873)	Japanese (N=1649)	Other Asian (N=15110)	Mexican (N=2606)	Puerto_Rican (N=1623)	Cuban (N=2228)	Central American Hispanic (N=2108)	South_American_Hispanic (N=1229)	Other Hispanic (N=2574)	Overall (N=262025)
Difficult_Self_care																
Yes	1558 (9.0%)	71 (5.8%)	1 (1.6%)	13 (10.5%)	20 (7.3%)	113 (3.2%)	57 (6.5%)	79 (4.8%)	707 (4.7%)	185 (7.1%)	124 (7.6%)	75 (3.4%)	49 (2.3%)	122 (9.9%)	74 (2.9%)	14635 (5.6%)
No	15711 (91.0%)	1160 (94.2%)	63 (98.4%)	111 (89.5%)	253 (92.7%)	3403 (96.8%)	816 (93.5%)	1570 (95.2%)	14403 (95.3%)	2421 (92.9%)	1499 (92.4%)	2153 (96.6%)	2059 (97.7%)	1107 (90.1%)	2500 (97.1%)	247390 (94.4%)
Difficult_Independent_Living																
Yes	2383 (13.8%)	99 (8.0%)	2 (3.1%)	19 (15.3%)	25 (9.2%)	209 (5.9%)	76 (8.7%)	146 (8.9%)	1169 (7.7%)	340 (13.0%)	181 (11.2%)	127 (5.7%)	107 (5.1%)	189 (15.4%)	173 (6.7%)	24297 (9.3%)
No	14886 (86.2%)	1132 (92.0%)	62 (96.9%)	105 (84.7%)	248 (90.8%)	3307 (94.1%)	797 (91.3%)	1503 (91.1%)	13941 (92.3%)	2266 (87.0%)	1442 (88.8%)	2101 (94.3%)	2001 (94.9%)	1040 (84.6%)	2401 (93.3%)	237728 (90.7%)
Difficult_Cognitive_Function																
Yes	1926 (11.2%)	71 (5.8%)	2 (3.1%)	14 (11.3%)	21 (7.7%)	125 (3.6%)	51 (5.8%)	99 (6.0%)	883 (5.8%)	260 (10.0%)	145 (8.9%)	117 (5.3%)	72 (3.4%)	161 (13.1%)	112 (4.4%)	18342 (7.0%)
No	15343 (88.8%)	1160 (94.2%)	62 (96.9%)	110 (88.7%)	252 (92.3%)	3391 (96.4%)	822 (94.2%)	1550 (94.0%)	14227 (94.2%)	2346 (90.0%)	1478 (91.1%)	2111 (94.7%)	2036 (96.6%)	1068 (86.9%)	2462 (95.6%)	243683 (93.0%)
Difficult_Vision																
Yes	1024 (5.9%)	45 (3.7%)	1 (1.6%)	9 (7.3%)	19 (7.0%)	53 (1.5%)	31 (3.6%)	41 (2.5%)	662 (4.4%)	152 (5.8%)	74 (4.6%)	70 (3.1%)	56 (2.7%)	80 (6.5%)	65 (2.5%)	10101 (3.9%)
No	16245 (94.1%)	1186 (96.3%)	63 (98.4%)	115 (92.7%)	254 (93.0%)	3463 (98.5%)	842 (96.4%)	1608 (97.5%)	14448 (95.6%)	2454 (94.2%)	1549 (95.4%)	2158 (96.9%)	2052 (97.3%)	1149 (93.5%)	2509 (97.5%)	251924 (96.1%)
Difficult_Hearing																
Yes	812 (4.7%)	23 (1.9%)	1 (1.6%)	8 (6.5%)	16 (5.9%)	125 (3.6%)	76 (8.7%)	55 (3.3%)	806 (5.3%)	134 (5.1%)	84 (5.2%)	59 (2.6%)	67 (3.2%)	97 (7.9%)	105 (4.1%)	19060 (7.3%)
No	16457 (95.3%)	1208 (98.1%)	63 (98.4%)	116 (93.5%)	257 (94.1%)	3391 (96.4%)	797 (91.3%)	1594 (96.7%)	14304 (94.7%)	2472 (94.9%)	1539 (94.8%)	2169 (97.4%)	2041 (96.8%)	1132 (92.1%)	2469 (95.9%)	242965 (92.7%)
AGE																
Mean (SD)	59.9 (12.2)	58.9 (12.6)	58.6 (14.0)	59.0 (11.7)	57.0 (11.7)	58.5 (12.6)	63.8 (14.3)	56.2 (11.6)	56.1 (12.0)	58.0 (12.6)	61.0 (13.9)	54.8 (11.1)	56.9 (12.2)	60.3 (13.4)	58.7 (12.4)	61.2 (12.8)
Median [Min, Max]	59.0 [40.0, 95.0]	57.0 [40.0, 95.0]	59.0 [40.0, 95.0]	58.0 [40.0, 94.0]	56.0 [40.0, 94.0]	57.0 [40.0, 95.0]	63.0 [40.0, 95.0]	54.0 [40.0, 95.0]	54.0 [40.0, 95.0]	56.0 [40.0, 95.0]	58.0 [40.0, 95.0]	53.0 [40.0, 94.0]	55.0 [40.0, 95.0]	59.0 [40.0, 95.0]	57.0 [40.0, 95.0]	60.0 [40.0, 96.0]
SEX																
Mean (SD)	1.55 (0.498)	1.59 (0.492)	1.55 (0.502)	1.61 (0.489)	1.62 (0.487)	1.57 (0.496)	1.62 (0.485)	1.53 (0.499)	1.51 (0.500)	1.53 (0.499)	1.52 (0.500)	1.54 (0.498)	1.56 (0.497)	1.57 (0.495)	1.62 (0.486)	1.53 (0.499)
Median [Min, Max]	2.00 [1.00, 2.00]	2.00 [1.00, 2.00]	2.00 [1.00, 2.00]	2.00 [1.00, 2.00]	2.00 [1.00, 2.00]	2.00 [1.00, 2.00]	2.00 [1.00, 2.00]	2.00 [1.00, 2.00]	2.00 [1.00, 2.00]	2.00 [1.00, 2.00]	2.00 [1.00, 2.00]	2.00 [1.00, 2.00]	2.00 [1.00, 2.00]	2.00 [1.00, 2.00]	2.00 [1.00, 2.00]	2.00 [1.00, 2.00]
Married																
Mean (SD)	0.405 (0.491)	0.521 (0.500)	0.453 (0.502)	0.323 (0.469)	0.370 (0.484)	0.752 (0.432)	0.633 (0.482)	0.727 (0.446)	0.633 (0.482)	0.513 (0.500)	0.575 (0.495)	0.613 (0.487)	0.670 (0.470)	0.496 (0.500)	0.730 (0.444)	0.627 (0.484)
Median [Min, Max]	0 [0, 1.00]	1.00 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	1.00 [0, 1.00]	1.00 [0, 1.00]	1.00 [0, 1.00]	1.00 [0, 1.00]	1.00 [0, 1.00]	1.00 [0, 1.00]	1.00 [0, 1.00]	1.00 [0, 1.00]	0 [0, 1.00]	1.00 [0, 1.00]	1.00 [0, 1.00]
Seperated/Divorced																
Mean (SD)	0.237 (0.425)	0.201 (0.401)	0.266 (0.445)	0.282 (0.452)	0.282 (0.451)	0.0981 (0.298)	0.126 (0.332)	0.0922 (0.289)	0.163 (0.369)	0.223 (0.416)	0.219 (0.414)	0.161 (0.368)	0.185 (0.388)	0.220 (0.414)	0.0952 (0.294)	0.167 (0.373)
Median [Min, Max]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]
Widowed																
Mean (SD)	0.108 (0.310)	0.0699 (0.255)	0.109 (0.315)	0.121 (0.327)	0.0952 (0.294)	0.0691 (0.254)	0.115 (0.319)	0.0800 (0.271)	0.0679 (0.252)	0.0779 (0.268)	0.0961 (0.295)	0.0583 (0.234)	0.0617 (0.241)	0.117 (0.322)	0.0913 (0.288)	0.0996 (0.299)
Median [Min, Max]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]
Never Married/Single																
Mean (SD)	0.250 (0.433)	0.208 (0.406)	0.172 (0.380)	0.274 (0.448)	0.253 (0.435)	0.0805 (0.272)	0.126 (0.332)	0.101 (0.302)	0.137 (0.343)	0.186 (0.389)	0.110 (0.313)	0.167 (0.373)	0.0830 (0.276)	0.167 (0.373)	0.0839 (0.277)	0.106 (0.308)
Median [Min, Max]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]
Northeast Region																
Yes	2136 (12.4%)	620 (50.4%)	46 (71.9%)	26 (21.0%)	37 (13.6%)	920 (26.2%)	65 (7.4%)	274 (16.6%)	278 (1.8%)	1192 (45.7%)	136 (8.4%)	328 (14.7%)	623 (29.6%)	151 (12.3%)	264 (10.3%)	47097 (18.0%)
No	15133 (87.6%)	611 (49.6%)	18 (28.1%)	98 (79.0%)	236 (86.4%)	2596 (73.8%)	808 (92.6%)	1375 (83.4%)	14832 (98.2%)	1414 (54.3%)	1487 (91.6%)	1900 (85.3%)	1485 (70.4%)	1078 (87.7%)	2310 (89.7%)	214928 (82.0%)
Midwest Region																
Yes	2888 (16.7%)	15 (1.2%)	0 (0%)	14 (11.3%)	44 (16.1%)	205 (5.8%)	45 (5.2%)	192 (11.6%)	1181 (7.8%)	220 (8.4%)	44 (2.7%)	88 (3.9%)	101 (4.8%)	84 (6.8%)	186 (7.2%)	56268 (21.5%)
No	14381 (83.3%)	1216 (98.8%)	64 (100%)	110 (88.7%)	229 (83.9%)	3311 (94.2%)	828 (94.8%)	1457 (88.4%)	13929 (92.2%)	2386 (91.6%)	1579 (97.3%)	2140 (96.1%)	2007 (95.2%)	1145 (93.2%)	2388 (92.8%)	205757 (78.5%)
South Region																
Yes	10596 (61.4%)	551 (44.8%)	17 (26.6%)	70 (56.5%)	166 (60.8%)	514 (14.6%)	110 (12.6%)	412 (25.0%)	5497 (36.4%)	1003 (38.5%)	1330 (81.9%)	893 (40.1%)	1036 (49.1%)	411 (33.4%)	423 (16.4%)	99682 (38.0%)
No	6673 (38.6%)	680 (55.2%)	47 (73.4%)	54 (43.5%)	107 (39.2%)	3002 (85.4%)	763 (87.4%)	1237 (75.0%)	9613 (63.6%)	1603 (61.5%)	293 (18.1%)	1335 (59.9%)	1072 (50.9%)	818 (66.6%)	2151 (83.6%)	162343 (62.0%)
West Region																
Yes	1649 (9.5%)	45 (3.7%)	1 (1.6%)	14 (11.3%)	26 (9.5%)	1877 (53.4%)	653 (74.8%)	771 (46.8%)	8154 (54.0%)	191 (7.3%)	113 (7.0%)	919 (41.2%)	348 (16.5%)	583 (47.4%)	1701 (66.1%)	58978 (22.5%)
No	15620 (90.5%)	1186 (96.3%)	63 (98.4%)	110 (88.7%)	247 (90.5%)	1639 (46.6%)	220 (25.2%)	878 (53.2%)	6956 (46.0%)	2415 (92.7%)	1510 (93.0%)	1309 (58.8%)	1760 (83.5%)	646 (52.6%)	873 (33.9%)	203047 (77.5%)
Less Than High School Diploma																
Yes	2585 (15.0%)	235 (19.1%)	12 (18.8%)	15 (12.1%)	35 (12.8%)	629 (17.9%)	38 (4.4%)	351 (21.3%)	5972 (39.5%)	565 (21.7%)	377 (23.2%)	949 (42.6%)	313 (14.8%)	306 (24.9%)	201 (7.8%)	29275 (11.2%)
No	14684 (85.0%)	996 (80.9%)	52 (81.3%)	109 (87.9%)	238 (87.2%)	2887 (82.1%)	835 (95.6%)	1298 (78.7%)	9138 (60.5%)	2041 (78.3%)	1246 (76.8%)	1279 (57.4%)	1795 (85.2%)	923 (75.1%)	2373 (92.2%)	232750 (88.8%)
High School Diploma																
Yes	5352 (31.0%)	352 (28.6%)	12 (18.8%)	36 (29.0%)	88 (32.2%)	586 (16.7%)	167 (19.1%)	331 (20.1%)	3941 (26.1%)	740 (28.4%)	411 (25.3%)	530 (23.8%)	492 (23.3%)	408 (33.2%)	391 (15.2%)	74200 (28.3%)
No	11917 (69.0%)	879 (71.4%)	52 (81.3%)	88 (71.0%)	185 (67.8%)	2930 (83.3%)	706 (80.9%)	1318 (79.9%)	11169 (73.9%)	1866 (71.6%)	1212 (74.7%)	1698 (76.2%)	1616 (76.7%)	821 (66.8%)	2183 (84.8%)	187825 (71.7%)
Some College/Associates Degree																
Yes	5427 (31.4%)	314 (25.5%)	18 (28.1%)	42 (33.9%)	89 (32.6%)	475 (13.5%)	230 (26.3%)	362 (22.0%)	3303 (21.9%)	721 (27.7%)	360 (22.2%)	465 (20.9%)	545 (25.9%)	304 (24.7%)	638 (24.8%)	74424 (28.4%)
No	11842 (68.6%)	917 (74.5%)	46 (71.9%)	82 (66.1%)	184 (67.4%)	3041 (86.5%)	643 (73.7%)	1287 (78.0%)	11807 (78.1%)	1885 (72.3%)	1263 (77.8%)	1763 (79.1%)	1563 (74.1%)	925 (75.3%)	1936 (75.2%)	187601 (71.6%)
Bachelor's Degree or Higher																
Yes	3905 (22.6%)	330 (26.8%)	22 (34.4%)	31 (25.0%)	61 (22.3%)	1826 (51.9%)	438 (50.2%)	605 (36.7%)	1894 (12.5%)	580 (22.3%)	475 (29.3%)	284 (12.7%)	758 (36.0%)	211 (17.2%)	1344 (52.2%)	84126 (32.1%)
No	13364 (77.4%)	901 (73.2%)	42 (65.6%)	93 (75.0%)	212 (77.7%)	1690 (48.1%)	435 (49.8%)	1044 (63.3%)	13216 (87.5%)	2026 (77.7%)	1148 (70.7%)	1944 (87.3%)	1350 (64.0%)	1018 (82.8%)	1230 (47.8%)	177899 (67.9%)
No Health Inusrance																
Mean (SD)	0.0855 (0.280)	0.101 (0.301)	0.0469 (0.213)	0.0323 (0.177)	0.106 (0.309)	0.0512 (0.220)	0.0183 (0.134)	0.0770 (0.267)	0.192 (0.394)	0.0748 (0.263)	0.109 (0.312)	0.213 (0.409)	0.136 (0.343)	0.123 (0.328)	0.0455 (0.208)	0.0606 (0.239)
Median [Min, Max]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]
Limited English Proficiency																
Mean (SD)	0.00678 (0.0820)	0.0658 (0.248)	0 (0)	0 (0)	0.0110 (0.104)	0.272 (0.445)	0.0962 (0.295)	0.138 (0.345)	0.134 (0.340)	0.116 (0.321)	0.261 (0.439)	0.204 (0.403)	0.195 (0.397)	0.0659 (0.248)	0.0676 (0.251)	0.0302 (0.171)
Median [Min, Max]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 0]	0 [0, 0]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]
Not a U.S. Citizen																
Mean (SD)	0.0159 (0.125)	0.215 (0.411)	0.172 (0.380)	0.0403 (0.198)	0.0110 (0.104)	0.228 (0.420)	0.234 (0.423)	0.191 (0.393)	0.280 (0.449)	0.0107 (0.103)	0.202 (0.402)	0.401 (0.490)	0.281 (0.450)	0.0862 (0.281)	0.176 (0.381)	0.0470 (0.212)
Median [Min, Max]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]	0 [0, 1.00]

All OLS Models

Figure 24

OLS Model 1, Major Racial Groups No Covariates

	Dependent variable:				
	Self-Care Disability	Independent Living Disability	Cognitive Function Disability	Vision Disability	Hearing Disability
	(1)	(2)	(3)	(4)	(5)
White	-0.005**	-0.011***	-0.022***	-0.012***	-0.0001
	(0.002)	(0.003)	(0.002)	(0.002)	(0.003)
Black	0.027***	0.030***	0.016***	0.009***	-0.033***
	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)
Asian	-0.022***	-0.035***	-0.046***	-0.027***	-0.043***
	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)
Hispanic	-0.005***	-0.010***	-0.010***	0.003**	-0.031***
	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)
Constant	0.059***	0.102***	0.089***	0.049***	0.081***
	(0.002)	(0.003)	(0.002)	(0.002)	(0.003)
Observations	262,025	262,025	262,025	262,025	262,025
R^2	0.002	0.002	0.003	0.002	0.003
Adjusted R^2	0.002	0.002	0.003	0.002	0.003
Residual Std. Error (df = 262020)	0.229	0.290	0.255	0.192	0.259
F Statistic (df = 4; 262020)	127.717***	140.550***	174.837***	104.105***	217.280***
Note:					*p**p***p<0.01

Figure 25

OLS Model 2, Major Racial Groups with Covariates

	Dependent variable:				
	Self-Care Disability	Independent Living Disability	Cognitive Function Disability	Vision Disability	Hearing Disability
	(1)	(2)	(3)	(4)	(5)
White	-0.008***	-0.014***	-0.016***	-0.013***	-0.013***
	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)
Black	0.013***	0.007**	-0.003	0.001	-0.040***
	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)
Asian	-0.006**	-0.009***	-0.020***	-0.017***	-0.029***
	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)
Hispanic	-0.004**	-0.012***	-0.018***	0.001	-0.018***
	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)
AGE	-0.019***	-0.029***	-0.016***	-0.007***	-0.019***
	(0.0003)	(0.0004)	(0.0003)	(0.0003)	(0.0003)
I(AGE2)	0.0002***	0.0003***	0.0001***	0.0001***	0.0002***
	(0.00000)	(0.00000)	(0.00000)	(0.00000)	(0.00000)
SEX	0.005***	0.015***	-0.001	-0.002**	-0.044***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Married	-0.063***	-0.100***	-0.098***	-0.022***	-0.003*
	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)
Seperated_Divorced	-0.032***	-0.052***	-0.047***	-0.002	0.007***
	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)
Widowed	-0.024***	-0.035***	-0.053***	0.001	0.004*
	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)
Northeast	-0.001	-0.003	-0.006***	-0.006***	-0.013***
	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)
Midwest	-0.001	-0.001	-0.001	-0.003**	-0.005***
	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)
South	0.0001	0.003**	0.003**	0.006***	0.004***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
HS	-0.044***	-0.069***	-0.064***	-0.025***	-0.023***
	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)
Some_college	-0.058***	-0.096***	-0.088***	-0.034***	-0.024***

	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)
Bachelor_Higher	-0.075***	-0.124***	-0.111***	-0.045***	-0.044***
	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)
No_Insurance	-0.028***	-0.042***	-0.023***	0.001	-0.005**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Linguistic_Isolation	-0.012***	-0.011***	-0.012***	-0.001	-0.016***
	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)
Not_Citizen	-0.019***	-0.030***	-0.040***	-0.015***	-0.015***
	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)
Constant	0.628***	0.969***	0.663***	0.272***	0.605***
	(0.009)	(0.012)	(0.011)	(0.008)	(0.011)
Observations	262,025	262,025	262,025	262,025	262,025
R^2	0.094	0.142	0.069	0.032	0.097
Adjusted R^2	0.094	0.142	0.069	0.032	0.097
Residual Std. Error (df = 262005)	0.219	0.269	0.246	0.189	0.247
F Statistic (df = 19; 262005)	1,434.232***	2,281.262***	1,028.525***	452.158***	1,483.824***
Note:					*p**p***p<0.01

Figure 26

OLS Model 1, All Ancestry Subgroups No Covariates

	Dependent variable:				
	Self-Care Disability	Independent Living Disability	Cognitive Function Disability	Vision Disability	Hearing Disability
	(1)	(2)	(3)	(4)	(5)
Western_Europeans_White	-0.035***	-0.044***	-0.042***	-0.015***	-0.002
	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)
Eastern_Europeans_White	-0.036***	-0.045***	-0.047***	-0.017***	-0.013***
	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)
Middle_Eastern_North_African_White	-0.022***	-0.036***	-0.050***	-0.019***	-0.040***
	(0.006)	(0.007)	(0.006)	(0.005)	(0.006)
North_American_White	-0.008***	-0.005**	-0.005***	-0.002	0.010***
	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)
Other_White	-0.026***	-0.031***	-0.019***	-0.008***	-0.006*
	(0.003)	(0.004)	(0.003)	(0.002)	(0.003)
Black_NorthAmerican	0.017***	0.024***	0.022***	0.015***	-0.032***
	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)
Black_African	-0.022***	-0.032***	-0.027***	-0.005	-0.055***
	(0.006)	(0.008)	(0.007)	(0.005)	(0.007)
Black_WestIndian	-0.019***	-0.038***	-0.035***	-0.010*	-0.060***
	(0.007)	(0.008)	(0.007)	(0.006)	(0.007)
Black_Central_South_American	-0.061**	-0.087**	-0.063**	-0.030	-0.065**
	(0.029)	(0.036)	(0.032)	(0.024)	(0.032)
Black_European	0.023	0.027	0.013	0.022	-0.018
	(0.020)	(0.025)	(0.022)	(0.017)	(0.023)
Other_Black	-0.001	-0.024	-0.019	0.023*	-0.023
	(0.014)	(0.017)	(0.015)	(0.012)	(0.016)
Asian_Chinese	-0.045***	-0.059***	-0.059***	-0.031***	-0.045***
	(0.004)	(0.005)	(0.004)	(0.003)	(0.005)
Filipino	-0.048***	-0.050***	-0.050***	-0.020***	-0.038***
	(0.005)	(0.006)	(0.005)	(0.004)	(0.005)
Indian	-0.051***	-0.069***	-0.071***	-0.033***	-0.056***
	(0.005)	(0.006)	(0.005)	(0.004)	(0.005)
Vietnamese	-0.033***	-0.039***	-0.034***	-0.016***	-0.043***

	(0.006)	(0.008)	(0.007)	(0.005)	(0.007)
Korean	-0.029***	-0.054***	-0.049***	-0.026***	-0.052***
	(0.007)	(0.009)	(0.008)	(0.006)	(0.008)
Japanese	-0.012	-0.032***	-0.036***	-0.011*	0.006
	(0.008)	(0.010)	(0.009)	(0.007)	(0.009)
Mexican	-0.029***	-0.040***	-0.035***	-0.002	-0.027***
	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)
Puerto_Rican	-0.005	0.013**	0.008	0.012***	-0.029***
	(0.005)	(0.006)	(0.005)	(0.004)	(0.005)
Cuban	0.001	-0.006	-0.006	-0.001	-0.028***
	(0.006)	(0.007)	(0.006)	(0.005)	(0.007)
Central_American_Hispanic	-0.042***	-0.061***	-0.041***	-0.013***	-0.054***
	(0.005)	(0.006)	(0.005)	(0.004)	(0.006)
South_American_Hispanic	-0.050***	-0.064***	-0.057***	-0.018***	-0.049***
	(0.005)	(0.006)	(0.006)	(0.004)	(0.006)
Other_Hispanic	0.025***	0.037***	0.038***	0.019***	-0.001
	(0.006)	(0.008)	(0.007)	(0.005)	(0.007)
Constant	0.077***	0.118***	0.094***	0.046***	0.081***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Observations	262,025	262,025	262,025	262,025	262,025
R^2	0.007	0.007	0.008	0.003	0.004
Adjusted R^2	0.006	0.007	0.008	0.003	0.004
Residual Std. Error (df = 262001)	0.229	0.289	0.254	0.192	0.259
F Statistic (df = 23; 262001)	75.339***	83.235***	95.174***	30.770***	43.707***
Note:					*p**p***p<0.01

Figure 27

OLS Model 2, All Ancestry Subgroups and Covariates

	Dependent variable:				
	Self-Care Disability	Independent Living Disability	Cognitive Function Disability	Vision Disability	Hearing Disability
	(1)	(2)	(3)	(4)	(5)
Western_Europeans_White	-0.027***	-0.029***	-0.027***	-0.009***	0.0001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Eastern_Europeans_White	-0.028***	-0.029***	-0.029***	-0.010***	-0.009***
	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)
Middle_Eastern_North_African_White	-0.001	-0.002	-0.024***	-0.007	-0.024***
	(0.005)	(0.007)	(0.006)	(0.005)	(0.006)
North_American_White	-0.007***	-0.004**	-0.004**	-0.003**	0.006***
	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)
Other_White	-0.012***	-0.009**	-0.003	-0.001	0.004
	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)
Black_NorthAmerican	0.011***	0.014***	0.007***	0.011***	-0.027***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Black_African	-0.00002	0.002	-0.010	0.005	-0.029***
	(0.006)	(0.007)	(0.007)	(0.005)	(0.007)
Black_WestIndian	-0.015**	-0.032***	-0.033***	-0.006	-0.041***
	(0.006)	(0.008)	(0.007)	(0.005)	(0.007)
Black_Central_South_American	-0.064**	-0.089***	-0.065**	-0.027	-0.051*
	(0.027)	(0.034)	(0.031)	(0.024)	(0.031)
Black_European	0.021	0.023	0.003	0.022	-0.003
	(0.019)	(0.023)	(0.022)	(0.017)	(0.022)
Other_Black	0.004	-0.020	-0.027*	0.023**	-0.0005
	(0.013)	(0.016)	(0.015)	(0.011)	(0.015)
Asian_Chinese	-0.022***	-0.024***	-0.030***	-0.018***	-0.019***
	(0.004)	(0.005)	(0.004)	(0.003)	(0.004)
Filipino	-0.023***	-0.011**	-0.018***	-0.005	-0.012**
	(0.004)	(0.005)	(0.005)	(0.004)	(0.005)
Indian	-0.013***	-0.006	-0.024***	-0.010**	-0.020***
	(0.005)	(0.006)	(0.005)	(0.004)	(0.005)

Vietnamese	-0.019***	-0.022***	-0.026***	-0.012**	-0.022***
	(0.006)	(0.007)	(0.007)	(0.005)	(0.007)
Korean	-0.003	-0.014*	-0.015*	-0.012**	-0.025***
	(0.007)	(0.008)	(0.007)	(0.006)	(0.008)
Japanese	-0.013*	-0.032***	-0.023***	-0.007	0.001
	(0.007)	(0.009)	(0.008)	(0.006)	(0.008)
Mexican	-0.021***	-0.031***	-0.038***	-0.002	-0.011***
	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)
Puerto_Rican	-0.004	0.013**	0.0004	0.013***	-0.013***
	(0.004)	(0.005)	(0.005)	(0.004)	(0.005)
Cuban	0.001	-0.010	-0.007	-0.007	-0.031***
	(0.006)	(0.007)	(0.006)	(0.005)	(0.006)
Central_American_Hispanic	-0.029***	-0.047***	-0.040***	-0.011***	-0.027***
	(0.005)	(0.006)	(0.005)	(0.004)	(0.005)
South_American_Hispanic	-0.025***	-0.026***	-0.030***	-0.007*	-0.019***
	(0.005)	(0.006)	(0.006)	(0.004)	(0.006)
Other_Hispanic	0.016**	0.020***	0.021***	0.013**	-0.002
	(0.006)	(0.008)	(0.007)	(0.005)	(0.007)
AGE	-0.019***	-0.029***	-0.016***	-0.007***	-0.019***
	(0.0003)	(0.0004)	(0.0003)	(0.0003)	(0.0003)
I(AGE2)	0.0002***	0.0003***	0.0001***	0.0001***	0.0002***
	(0.00000)	(0.00000)	(0.00000)	(0.00000)	(0.00000)
SEX	0.004***	0.015***	-0.001	-0.002**	-0.044***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Married	-0.062***	-0.098***	-0.096***	-0.022***	-0.002
	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)
Seperated_Divorced	-0.031***	-0.052***	-0.047***	-0.002	0.007***
	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)
Widowed	-0.024***	-0.035***	-0.053***	0.001	0.004*
	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)
Northeast	0.001	-0.003	-0.005***	-0.005***	-0.012***
	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)
Midwest	-0.0004	-0.001	-0.001	-0.003**	-0.005***
	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)
South	-0.002*	-0.0002	-0.001	0.005***	0.003**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)

HS	-0.043***	-0.068***	-0.064***	-0.025***	-0.022***
	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)
Some_college	-0.055***	-0.093***	-0.085***	-0.033***	-0.023***
	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)
Bachelor_Higher	-0.070***	-0.119***	-0.107***	-0.044***	-0.043***
	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)
No_Insurance	-0.028***	-0.042***	-0.023***	0.002	-0.004**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Linguistic_Isolation	-0.012***	-0.010***	-0.012***	0.001	-0.013***
	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)
Not_Citizen	-0.015***	-0.023***	-0.034***	-0.012***	-0.014***
	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)
Constant	0.621***	0.957***	0.649***	0.261***	0.592***
	(0.009)	(0.011)	(0.010)	(0.008)	(0.011)
Observations	262,025	262,025	262,025	262,025	262,025
R^2	0.097	0.144	0.072	0.032	0.097
Adjusted R^2	0.097	0.144	0.072	0.032	0.097
Residual Std. Error (df = 261986)	0.218	0.268	0.246	0.189	0.247
F Statistic (df = 38; 261986)	738.073***	1,160.708***	533.051***	228.123***	742.290***
Note:					*p**p***p<0.01

Figure 28

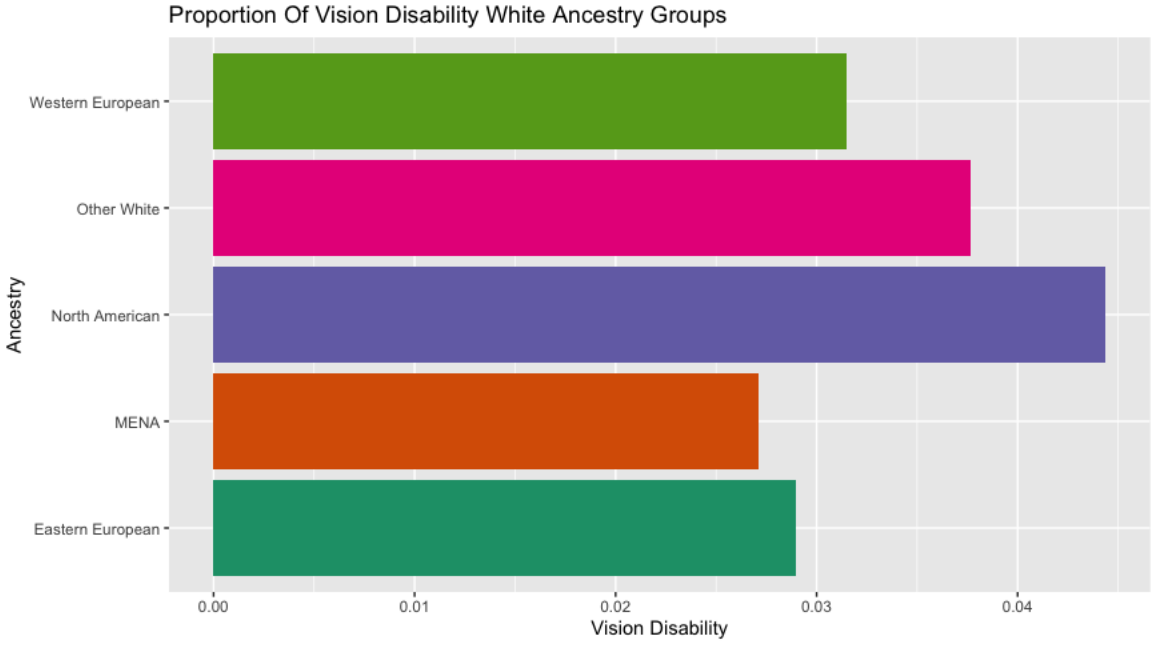


Figure 29

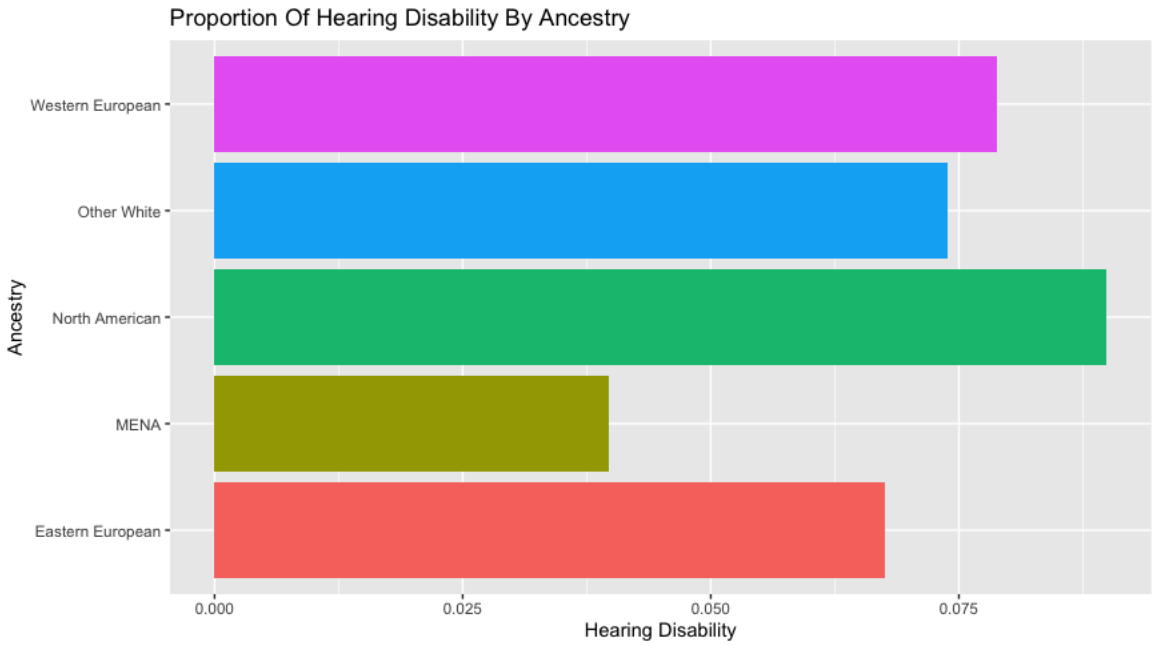


Figure 30

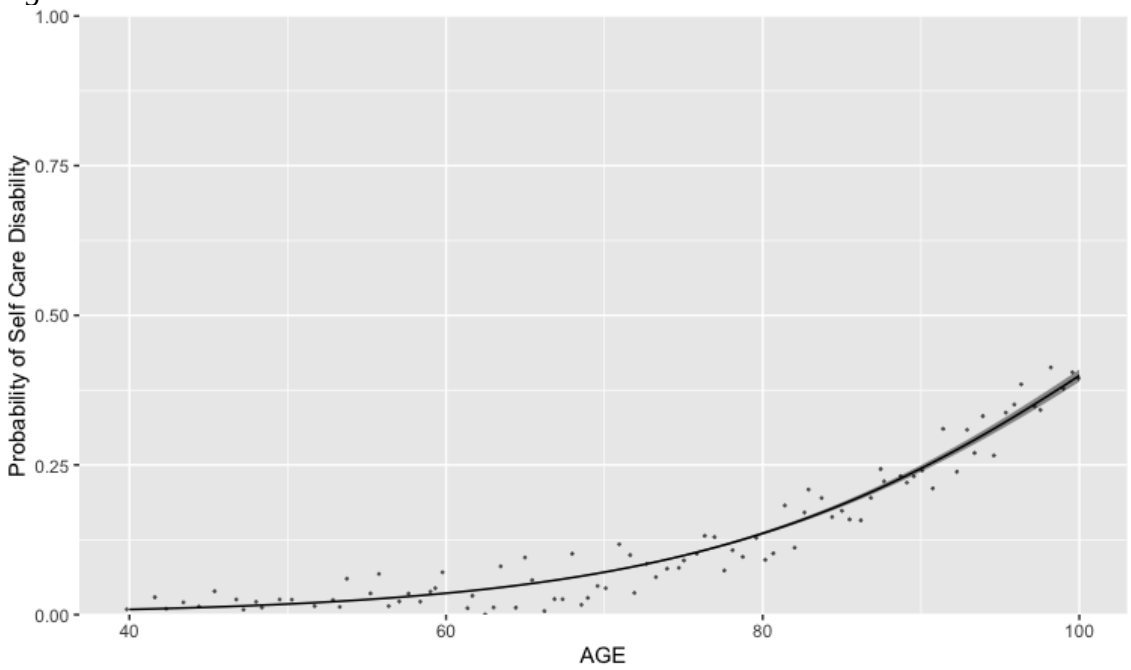
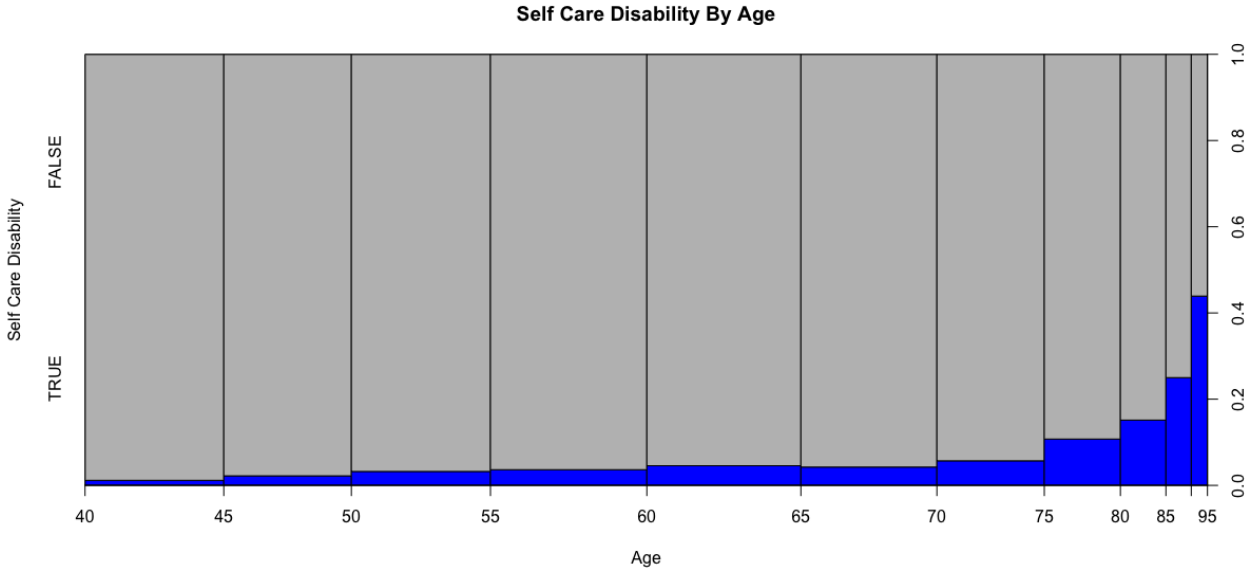


Figure 31


Self Care Disability By Age
Self Care Disability
FALSE
TRUE
1.0
0.8
0.6
0.4
0.2
0.0
40
45
50
55
60
65
70
75
80
85
95
Age