Racial dimensions of disability: weathering and residential context

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Abstract

The purpose of this paper is to examine rates of disability by age, race, sex and rural-urban residence, focusing on differences between racial groups and on the variables associated with racial differences in disability rates. Data from the American Community Survey (2011-2015), and the definition of disability utilized within the ACS, are incorporated to clarify disability rates for Blacks, American Indians, Asians and Whites and whether differences in rates can be explained by variables beyond race. For the analysis, each group is divided by rural and urban residence to closely examine differences in disability by age, sex and context. Multivariate logit analysis suggests that the weathering hypothesis explains much of the difference between rates, but so does the residential context.

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The relationship between race and disability in the US appears as one would expect. Specifically, because disability is often associated with health and since the relationship between health and race has long been established as unequal based on a variety of indicators including health care access and socioeconomic status, race and disability are similarly associated. Indeed, rates of disability are higher for Blacks and Native Americans than for Whites, with age and rural/urban residence controlled. At the same time, Asian Americans have substantially lower rates of disability, when age and residence controlled, than do Whites (Ravesloot et al 2016) .

Much of the research on race and health utilizes the concept of weathering. That is, the theory from Arline Geronimus (1992) that African American women's health as well as that of their infants, is affected, at early ages and throughout the life course, by the cumulative impact of socioeconomic deprivation. The hypothesis has been expanded to males, Hispanics, Hispanic Americans, immigrant children and other disadvantaged groups (e.g. Geronimus 2006, Schmeer and Terrance 2018, among others). Weathering has its impacts on health through social, economic, political, and related social systems and institutions that result in residential and social segregation of Black Americans into less advantaged neighborhoods, educational settings, housing, and employment. The influence of weathering does not necessarily occur at birth, but is truly cumulative – it is as though the human organism is slowly broken down or weathered, by the impact of long-term micro- and macro-level discrimination throughout the life-time.

The effect of weathering is strongest among the least advantaged and, because it is cumulative, the health effects of weathering have the least effect among the youngest members of a population but grow stronger throughout the life course (Hicken nd). Thus, context, as much as anything, less advantaged place of residence or neighborhood context tends to depress outcomes for minorities, beginning early. As a result, by the time minority women reach childbearing ages, their infant outcomes are already worse than for non-minority women (Crimmins, Kim, and Alley 2007).   Stress hormone levels (cortisol) as documented by Zeiders, Doane, Roosa and others (2012), are shown to be higher among African American women and Latin American women.

There is substantially less research on American Indian women and men but, unfortunately, there is no reason to believe that the group is less prone to the influences of cumulative discrimination than other groups. Indeed, American Indians who experience racial and social discrimination show overall worse health outcomes (e.g. Krieger et al 2005).

Interestingly, however, other factors come into play when disability, as opposed to health, is in consideration. In specific, research has shown (Ravesloot et al 2016; von Reichert and Berry, under review) that rural places have higher rates of residence by persons with disabilities, even with other variables including age, controlled. Why this is the case is not completely understood and it is also true that the majority of persons with disabilities live in urban residences. Still, the intriguing finding that rural places have higher rates of disability has led to discussion of a hypothesis that residential "fit" may be a factor. By fit is meant that there may be some residential contexts that are more conducive to living with a disability. Thus,

exploring rural/urban residence, in relationship to disability and race, becomes an important research stream.

Health, of course, is not disability and disability is what is being documented in this analysis. However, there is no reason to believe that the effects of health discrimination cannot themselves lead to disability; nor that the impacts of disability fail to be exacerbated by weathering; and that, therefore, for minorities, the impact of weathering is to make for greater levels of disability at earlier stages in the life course.

Disability

Health and disability are not necessarily related but there may be a causal relationship between the two. The definition of disability, as used by the WHO, refers to individual and health impairments that result in physical barriers to activity. The definition includes activity limitations such as difficulty in executing tasks, and to restrictions in participation in society – so social barriers. To this definition is added an understanding that some disability is associated with limitations on self-care and activities of daily living. Rates of disability by type are shown in Figure 1, using data from the ACS (2015).

Figure 1. Rate of Occurrence of Disability Types: Data, ACS (2011-2015)

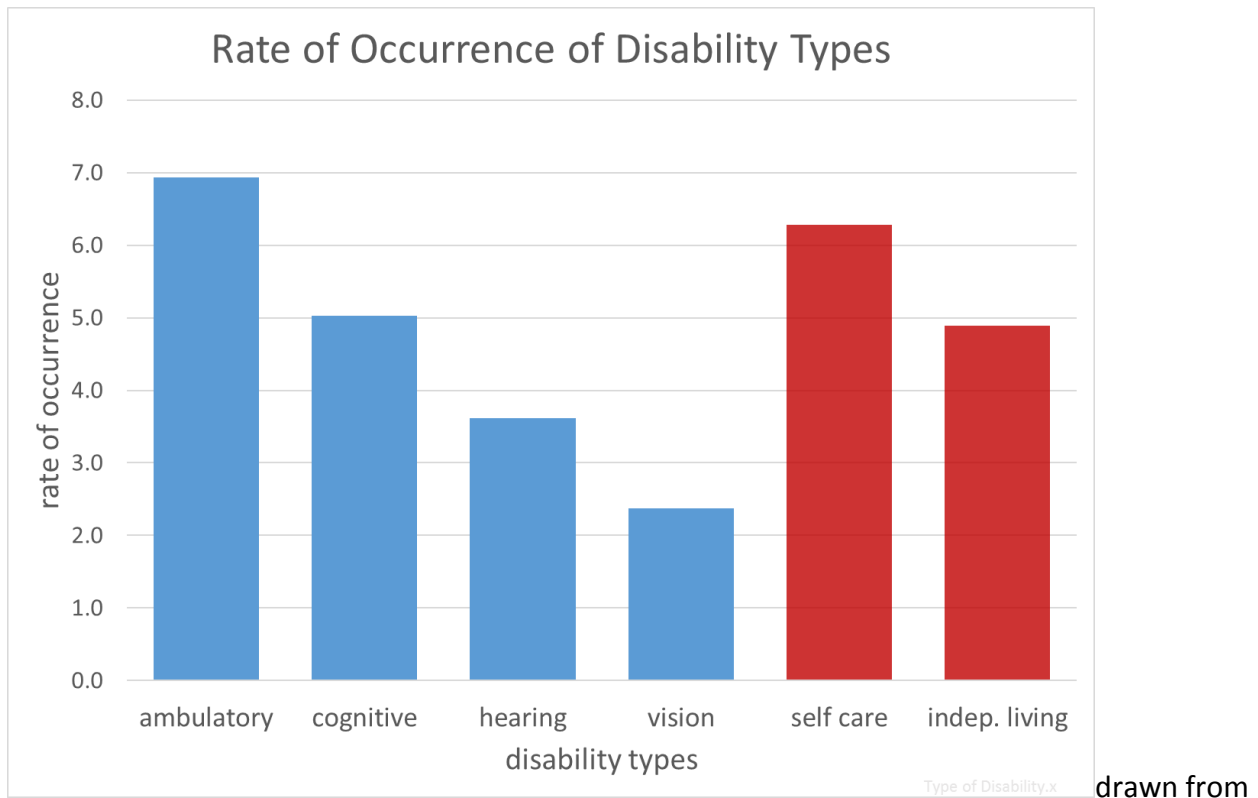Type of Disability.x   drawn from

Figure 2 shows that both the rates of disability and the prevalence of disabilities are surprisingly high throughout the population. As can be seen in the figure, a majority of persons with disabilities are younger than retirement age. Indeed, the data illustrated in Figure 2 indicate that number of persons with disability are surprisingly high in the youngest ages, and the rate, although low among the young, slowly increases until about age 40, then skyrockets between ages 40 and 64.   Disability can be a function of birth issues, health, accidents, and other factors, but disability rates are, very obviously associated with age, climbing ever higher through ages 70 and above.

Figure 2. Persons with Disability and Disability Rate by Age

Persons with Disability and Disability Rate by Age
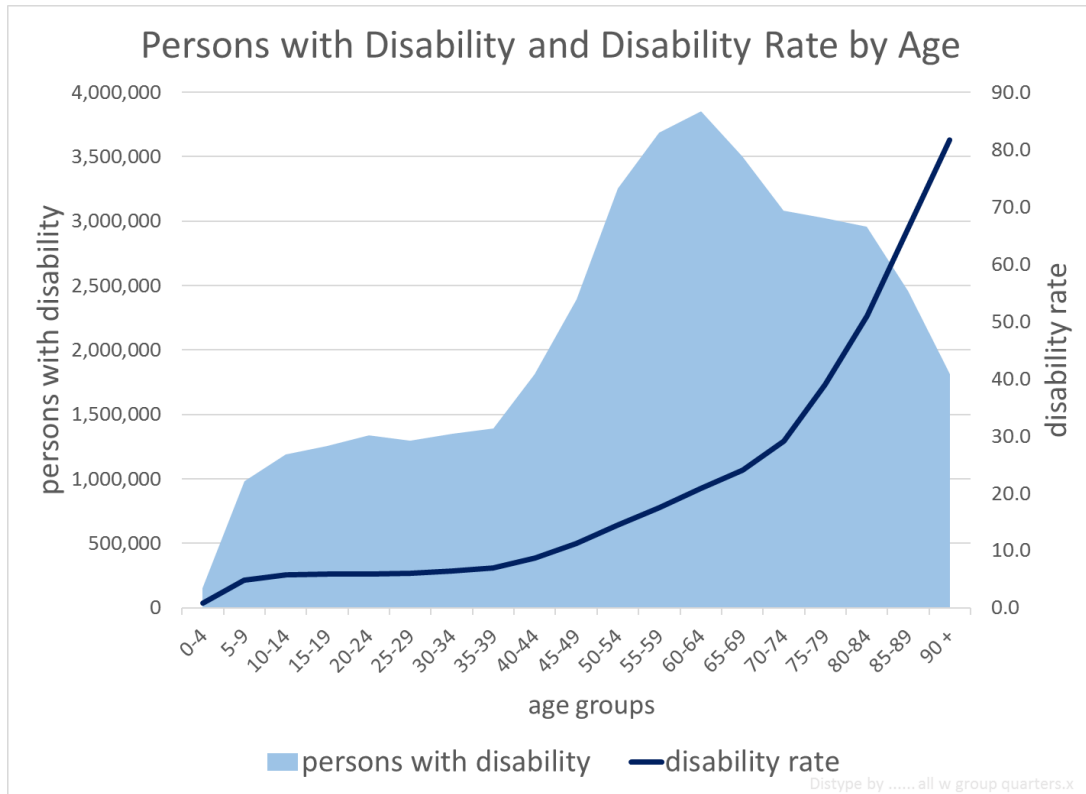
Method

The Data

The American Community Survey (ACS) 2011-2015 5-year Public Use Microdata Sample (US
Census Bureau, 2017) is utilized for the analysis. The ACS is a yearly survey of demographic
characteristics of the population and households of the United States. Data is collected from
larger areas more often, but the 5-year estimates from the ACS are period estimates that are a
sampling of data collected over a period of five years, providing data for both larger and smaller
geographic areas of the United States. The 2011-2015 ACS PUMS consists of over 15 million
cases but excludes Puerto Rico.

Disability Measures

There are six disability-related questions in the ACS, four of which ask about impairments related to hearing, vision, movement (ambulatory) and cognition and two that query activity limitations regarding self-care and independent living. Those persons who identify as experiencing one or several impairments and/or activity limitations are considered to experience disability. For the purpose of this research disability is a binary variable: persons with disability and persons without disability.

PUMS Geographies: PUMAs and MIGPUMAs

ACS Public Use Microdata Sample is available for Public Use Microdata Areas (PUMAs). To protect confidentiality of respondents, PUMAs have a minimum population of 100,000. PUMAs in metropolitan areas may consist of one or a cluster of census tracts, but in more sparsely settled areas are typically made up of multiple counties. For persons who indicate they moved to a different house within the last year, ACS PUMS releases data for MIGPUMAs to indicate the prior location.

Preliminary results.

Preliminary analysis shows clearly that there are important differences in disability rates between the Census-designated racial groups. Interestingly, those who are two or more races, or those who are "Other" (other meaning non-Black, non-American Indian, non-Asian, and non-White) have lower rates of persons with disability than do Whites, although their rates are higher than those of Asians.

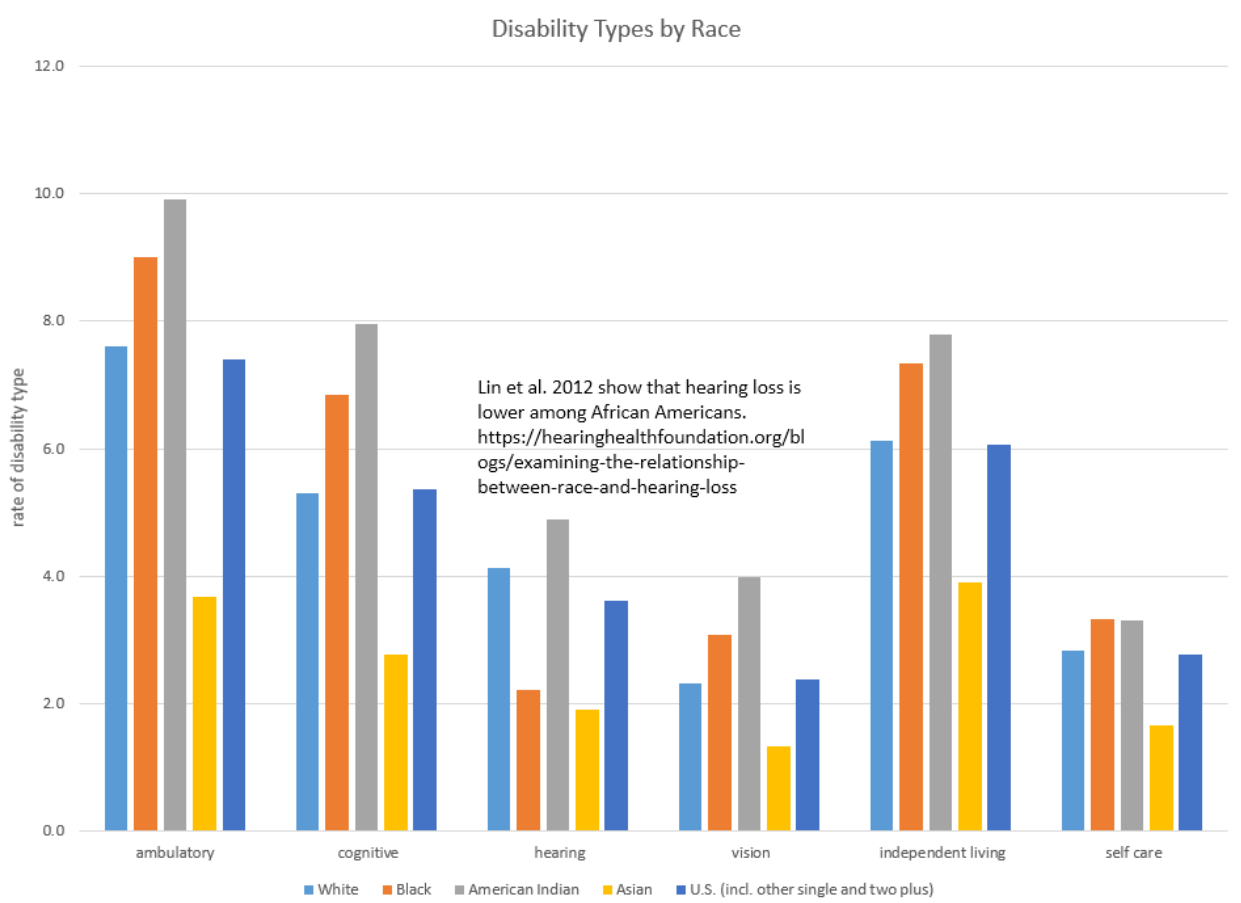Figure 3. Prevalence of Disability by Racial Group
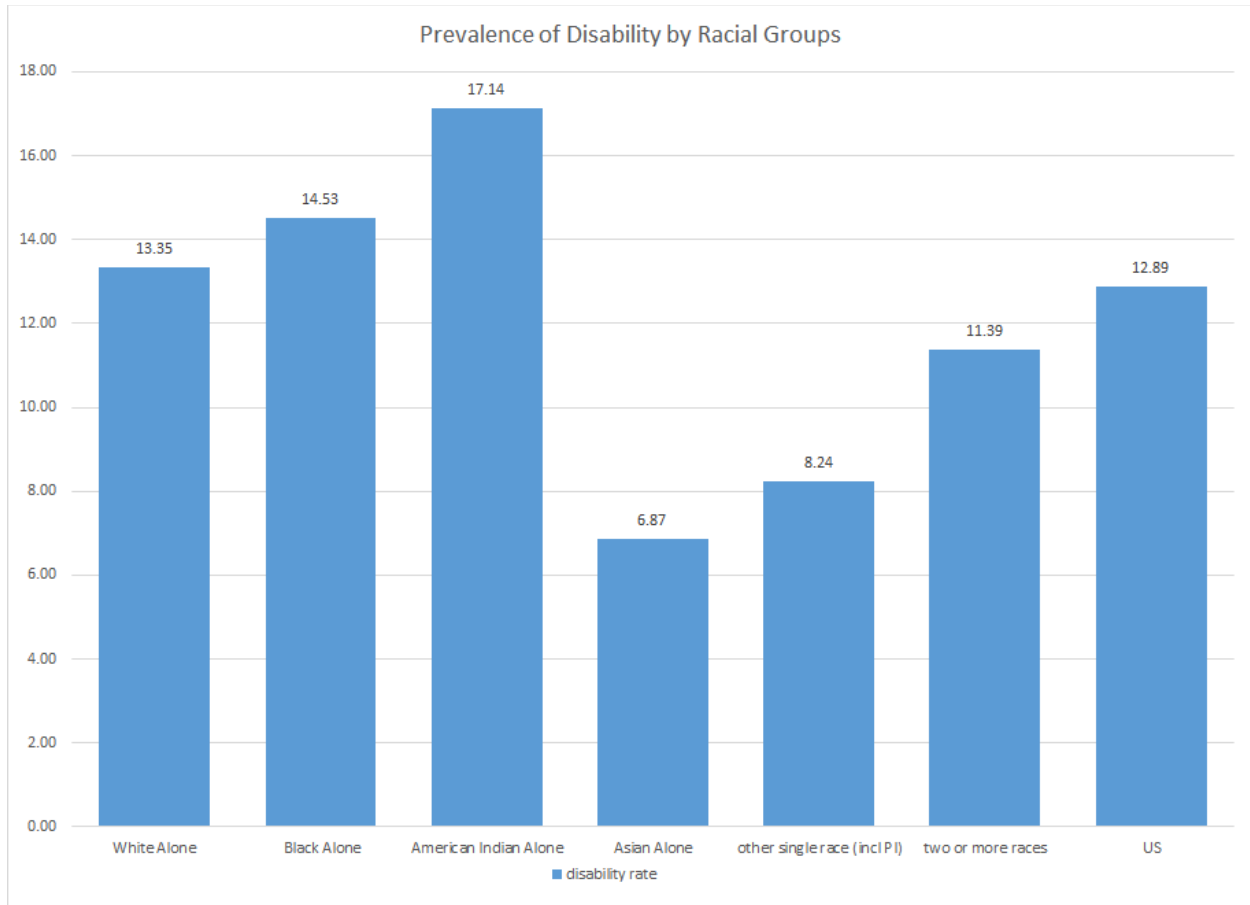
As disability is known to be connected to age, differences in disability rates track aging (Figure 4.) The groups that exhibit earliest on-set disability are, first, Native Americans followed by Blacks. For Native Americans in their 50s, disability rates are twice as high as the US average (for those age groups). Blacks, too, have rates that are roughly 50% higher than the US average. Whites exhibit disability rates at approximately the national average. Asians, with the lowest overall disability rate experience relatively little disability through most of the life course. Asians do, however, encounter disability at older ages than average and, when they begin to experience it, their rates rise to meet those of the other groups in old age (late 70s and 80s).

Figure 4. Disability rate by Race and Age:White, Black, American Indian and Asian are shown but the US Average includes other single races and two or more races combined.
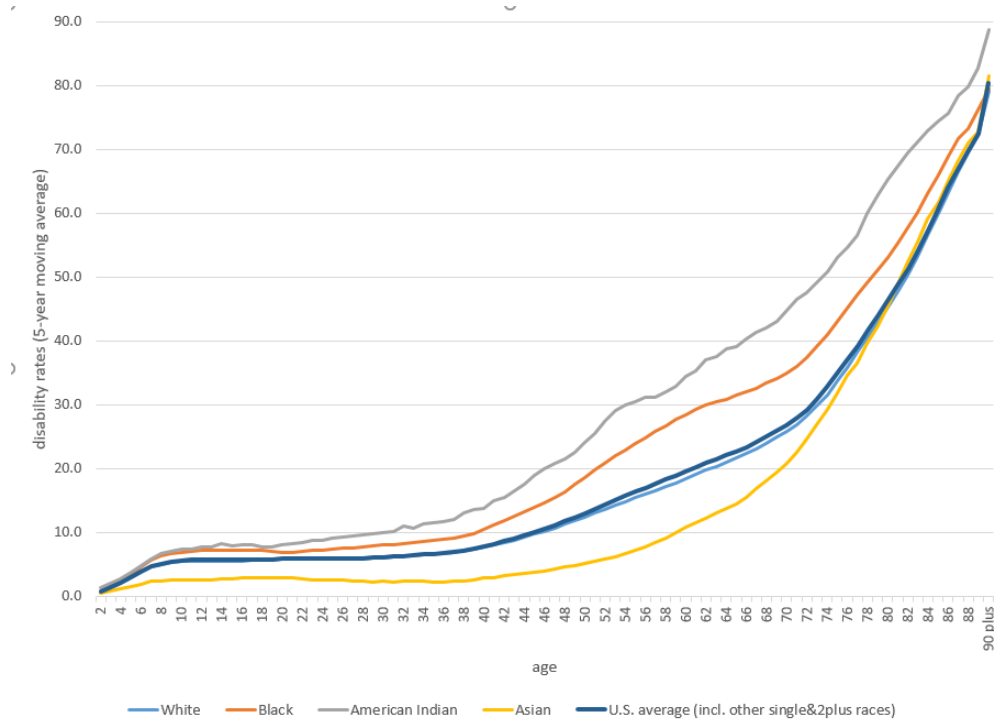
There are also racial dimensions to disability types, impairment types and functional limitations (see Figure 5). Again, impairment and functional imitation rates of Whites closely follow the national average. For Blacks those rates are higher, with the exception of hearing impairments (consistent with the findings by Lin et al. 2012). For Native Americans, impairment and functional limitations are higher still, while the rates are consistently lower for Asians (other races not shown for better focus on main groups.) In essence, racial differences in aggregate disability are generally replicated across disability types.

Figure 5. Disability Types: Rates of Impairment and Functional Limitations by Race

Disability Types by Race

Lin et al. 2012 show that hearing loss is lower among African Americans. https://hearinghealthfoundation.org/blogs/examining-the-relationship-between-race-and-hearing-loss

Legend: White, Black, American Indian, Asian, U.S. (incl. other single and two plus)

Multivariate Analysis

Logistic regression is used to examine the effects of race after controlling for factors known to relate to disability (Figure 6). The analysis is limited to persons age 15 and over (all disability types are defined). Gender (examined here as sex) is also considered for its potential connection to disability since, if age is not controlled, more women are appear to be disabled. Finally, rural-urban residence is included in the model (rural-urban residence is defined using USDA Beale codes, USDA 2013).

The results of the logistic regression indicate that, first and foremost, age is most closely associated with disability. Utilizing a reference group of 15-34 year olds, odds of disability rise significantly with increasing age. There is an urban-rural dimension to disability, such that people in more rural areas are 50 plus percent more likely to experience disability than people in large metro areas. Similarly, a modest gender effect appears with other variables controlled: women are slightly less likely to experience disability. Still, after controlling for age, gender, and locality, there is a noteworthy racial dimension of disability. When compared to Whites, disability odds go up for Blacks and especially for Native Americans, while Asians have much lower disability odds. Other, smaller racial groups (other single race and two or more races are shown as well.)

Figure 6. Logistic regression results for odds of disability regressed on race, urban-rural setting, age and gender

Odds of Disability by Race, Urbab-Rural Setting, Age, and Gender
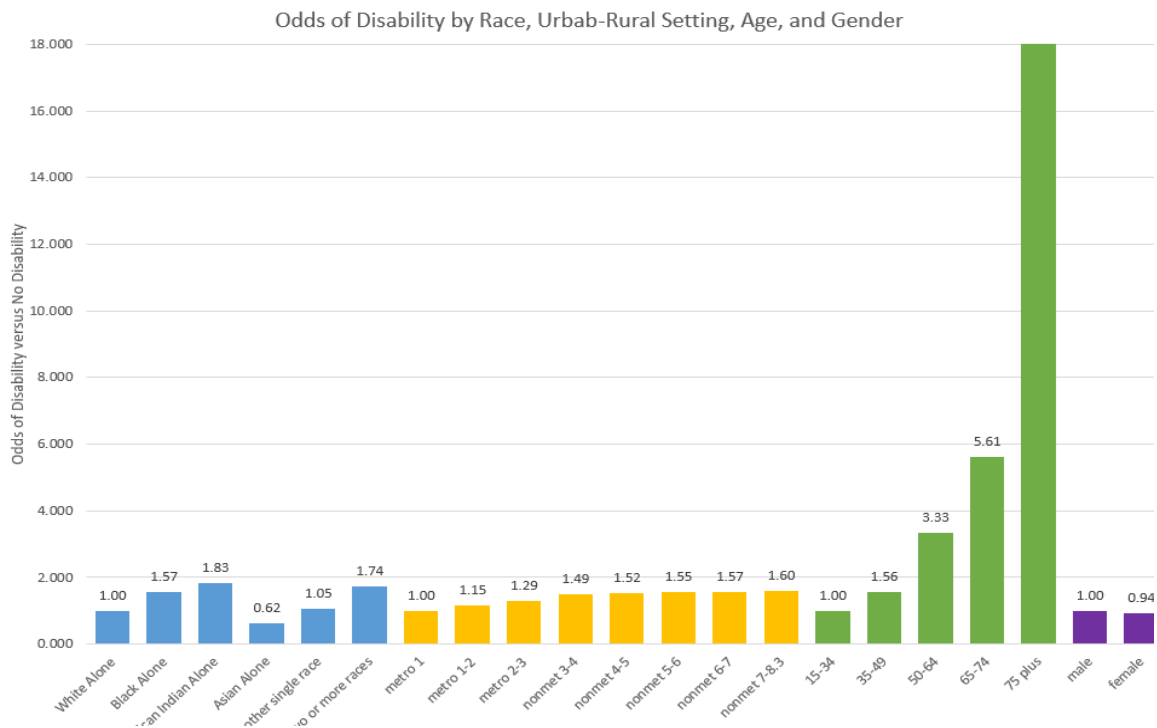
Conclusions

We believe that the relationship between race and disability is associated with the weathering hypothesis, but also with environmental fit. We posit an interaction between weathering and residence that goes beyond the assumptions put forth by the weathering hypothesis.   If weathering can be operationalized through age, and fit operationalized through rural/urban residence, then both factors seem to be operating with the other variable controlled.

Further analysis is forthcoming but research indicates that both, fit and weathering, are important.

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