

## DIFFERENTIAL EFFECTS OF AGING IN PLACE ON DISABILITY AMONG BLACK AND WHITE ELDERLY

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The black health disadvantage, including old-age disability, is well-known and persists over the life course, although it is smaller in the older population (Thomson et al. 2009, Adler and Rehkopf 2008). In nonmetropolitan areas, as in the U.S. as a whole, health disparities between African Americans and non-Hispanic whites begin to emerge in early adulthood and continue to widen through middle age (Peek and Zsembik 2004). Both race and place of residence play a role in shaping health status and disability, and some would argue that these effects are cumulative in a way that ages African Americans prematurely, resulting in greater functional limitations and disability (Geronimus et al. 2001). The aim of this paper is to analyze the differences between African Americans and non-Hispanic whites in disability for persons age 65 and older. In that analysis, we pay special attention to place, specifically residence in metropolitan vs. nonmetropolitan areas and Southern states vs. other states. Residency in these areas are important for examining race differentials in disability because the historical experience of African Americans is different in the South than in other regions of the United States and because for the majority of blacks and whites, life in U.S. nonmetropolitan areas differs dramatically from life in the metropolitan core. Although cumulative disadvantage is more often considered in terms of age, we examine racial differentials in the effects that place of residence and length of residency have on disability in old age within the limitations of our data source, the American Community Survey. Our analysis builds on an earlier descriptive paper (Lee and Singelmann, forthcoming) in which we detail the importance of metro status and region for the incidence of disability of blacks and whites.

### Literature

Over the past 20 years or so, the weathering hypothesis was developed to explain why the health gap between whites and blacks appears to increase with age. According to this hypothesis, obstacles faced by blacks to a larger extent than by whites tend to chip away at the health of individuals. As people age, the health status of disadvantaged groups deteriorates faster, thus increasing any

differential that already existed at younger ages. Although, at the oldest ages, selectivity may make the gap appear to narrow, some disparities persist.

The weathering hypothesis is part of a larger body of work that makes a case for a cumulative disadvantage for population groups that are left out of the main stream (or have large proportions of people in that category). These groups include social minorities, the less educated, and the poor. The concept of cumulative disadvantage was first formulated in relation to people with lesser human capital (Dannefer 2003) who are not competitive in the labor market, carry out strenuous work, have low income, and lack access to (appropriate) medical services. Disadvantages build up over the life span and result in inferior health status at older age. Hungerford (2007:491) showed, for example, that persons “who experience middle-age chronic hardships are significantly (statistically) more likely to experience adverse old-age outcomes.” Similar cumulative-disadvantage effects have also been found for women, identifying a socioeconomic status-frailty connection (Szanton et al. 2011). A recent study by Lee (2011) examined the effect of educational attainment on disability at older ages for native-born non-Hispanic whites and foreign-born Asians in the United States. The findings showed that while education affects the rate of disability for both population groups, the strength of the effects differed by race.

Lee and Singelmann (forthcoming) examined old-age disability for blacks and whites by place of residence, postulating that non-metropolitan residence would exacerbate black disadvantage. They found that blacks have higher rates of disability of all types than do whites, regardless of metro-nonmetro status. Before race is taken into account, disability is more prevalent among the nonmetropolitan elderly than among elderly metropolitan residents. Comparison of metropolitan and nonmetropolitan whites reveals that non-metropolitan whites have lower disability rates than metropolitan whites, despite the disadvantages of white nonmetropolitan residents in terms of education and concentration in the South. That is not the case for nonmetropolitan blacks. Nonmetropolitan residence increases the likelihood of disability much more for blacks than it does for

whites. For both blacks and whites, residence in the South is associated with higher rates of disability when compared with residence in the non-South.

## **DATA & METHODS**

### **Data and Variables**

We use data from the 2009 American Community Survey Public Use Microdata Sample (ACS PUMS). The ACS is a nationwide survey. The annual ACS PUMS includes respondents from all U.S. cities, counties, and metropolitan areas with a population of 65,000 or more. This study focuses on the cumulative disadvantage of residence in non-metropolitan vs. metropolitan areas and in the southern states vs. other states among the elderly. For this reason, we limit our analyses to persons 65 years of age and older who are resident in PUMAs (Public Use Microdata Areas) that had a one hundred percent metropolitan or a one hundred percent non-metropolitan population in 2000.

**Disability Status.** In the 2009 ACS, people are identified as having a disability on the basis of whether or not they exhibit difficulty with specific functions. In the absence of any accommodations, difficulty with these functions may mean that an individual faces limitations in activities and restrictions on full participation at home, at work, or in the community. This definition provides information relevant to program development and implementation in federal agencies. In the 2009 ACS, the four basic functions assessed are hearing, vision, cognition, and ambulation. In addition, respondents are asked about difficulties with selected activities from the Katz Activities of Daily Living (ADL) and Lawton Instrumental Activities of Daily Living (IADL) scales: difficulty bathing and dressing, and difficulty performing errands such as shopping.

**Covariates.** The ACS is a cross-sectional survey that provides no information on the past history of the elderly aside from place of birth and immigrant status. We focus on disadvantage that may be

associated with interaction of race and current place of residence. In addition, we look at the effect of length of residence (less than one year vs. more than one year as well as residence in the state in which one was born). We control for other key characteristics such as age, gender, and educational attainment.

### **Analytic strategy**

We compare the disability status of residents in metropolitan and non-metropolitan areas (southern states and other states) by race. We look at the distribution of individual physical, mental, and instrumental difficulties in each place-race group. Using logistic regression, we test whether race and place interactions significantly increase the likelihood of any disability (measured as saying yes to having any of the six difficulties about which respondents are questioned in the ACS) net of other factors associated with disability. We also look at the effect of the place-race interaction on the odds of reporting each type of disability.

To estimate standard errors for all analyses, we use the ACS PUMS replicate weights, taking advantage of options in statistical packages which allow the successive difference replicate weights to be treated as jackknife replicate weights.

### **Preliminary Results**

All else equal, living in the U.S. South and nonmetropolitan residence increases the odds of disability for an elderly person. The disadvantage of nonmetropolitan residence is greatest for a native-born black man in the U.S. but may also be observed for black women, whites, and foreign-born blacks. The effect of being foreign-born improves the log-odds of not being disabled by almost as much as being a nonmetropolitan residence increases the log-odds of being disabled. Southern residence also increases the odds of disability.

Table 1 - Selected Characteristics of the Sample, Age 65 and Older by Race

	<b>All</b>		<b>White</b>		<b>Black</b>	
	<b>Mean</b>	<b>Std. Err (jackknife)</b>	<b>Mean</b>	<b>Std. Err (jackknife)</b>	<b>Mean</b>	<b>Std. Err (jackknife)</b>
<b>Any disability</b>	0.37	0.001	0.36	0.001	0.43	0.003
<b>self-care disability</b>	0.09	0.001	0.08	0.001	0.12	0.002
<b>cognitive disability</b>	0.09	0.001	0.09	0.001	0.13	0.002
<b>ambulatory disability</b>	0.24	0.001	0.23	0.001	0.32	0.003
<b>independent living disability</b>	0.17	0.001	0.16	0.001	0.22	0.003
<b>vision disability</b>	0.07	0.001	0.07	0.001	0.10	0.002
<b>hearing disability</b>	0.15	0.001	0.16	0.001	0.10	0.002
<b>Nonmetropolitan Residence</b>	0.14	0.000	0.15	0.000	0.07	0.001
<b>Southern residence</b>	0.34	0.000	0.34	0.000	0.50	0.002
<b>Age</b>	74.87	0.009	75.04	0.010	74.04	0.042
<b>Female</b>	0.57	0.000	0.57	0.000	0.61	0.001
<b>No high school degree</b>	0.22	0.001	0.19	0.001	0.37	0.004
<b>High school/no college</b>	0.56	0.001	0.58	0.001	0.50	0.003
<b>Foreign-born</b>	0.14	0.001	0.10	0.001	0.10	0.002

Note: Authors' Estimates, American Community Survey 2009

Table 2 - Effect of Race and Place on Log-Odds of Disability for the Elderly

	<b>Coeff</b>	<b>Std. Err (jackknife)</b>	<b>t-statistic</b>
<b>Black</b>	0.07	0.025	2.9
<b>White</b>	-0.23	0.020	-11.5
<b>Foreign-born</b>	-0.16	0.014	-11.7
<b>Nonmetro</b>	0.17	0.011	15.2
<b>South</b>	0.11	0.010	11.4
<b>Age</b>	0.09	0.001	160.2
<b>Female</b>	-0.03	0.008	-3.8
<b>No high school degree</b>	1.00	0.014	73.3
<b>High school/no college (BA degree or higher)</b>	0.45	0.012	37.6
<b>Constant</b>	-7.66	0.047	-162.7

Note: Authors' estimates, American Community Survey 2009

Table 3 – Predicted Odds of Disability for College-Educated at Age 75, Native-Born and Foreign-Born

<b>Panel A: Native Born</b>				
	<b>metropolitan non-south</b>	<b>metropolitan south</b>	<b>nonmetropolitan south</b>	
<b>Black Woman</b>	0.43	0.48	0.57	
<b>Black Man</b>	0.44	0.49	0.59	
<b>White Woman</b>	0.31	0.35	0.42	
<b>White Man</b>	0.32	0.36	0.43	
<b>Panel B: Foreign Born</b>				
	<b>metropolitan non-south</b>	<b>metropolitan south</b>	<b>nonmetropolitan south</b>	
<b>Black Woman</b>	0.36	0.41	0.48	
<b>Black Man</b>	0.37	0.42	0.50	
<b>White Woman</b>	0.27	0.30	0.36	
<b>White Man</b>	0.28	0.31	0.37	

Source: Authors' estimates, American Community Survey 2009

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