Zajacova, A., Montez, J.K., & Herd, P. (2014). Socioeconomic disparities in health among older adults and the implications for the retirement age debate: a brief report. *Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, *69(6)*, 973–978, doi:10.1093/geronb/gbu041. Advance Access publication May 8, 2014

Socioeconomic Disparities in Health Among Older Adults and the Implications for the Retirement Age Debate: A Brief Report

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Objective. Policy debates about raising the full retirement age often neglect socioeconomic health disparities among U.S. workers. In response to this gap, we analyzed educational differentials in health among middle-age and older adults and translated the findings into age equivalents.

Method. We used the nationally representative 1997–2010 National Health Interview Surveys data on white and black adults aged 40–74 (N = 341,060). Using nonparametric regression (locally weighted scatterplot smoother) stratified by sex, race, and three educational levels, we determined age-specific prevalence of fair or poor self-rated health and any activity limitation, and compared the ages at which different demographic groups experienced a specific level of these two outcomes.

Results. Results varied slightly across health outcomes and demographic groups but generally showed that college-educated white men reported a level of limitations at age 70 that is equivalent to the levels reported by high school graduates at age 40–55. High school dropouts reported worse health at age 40 than the college educated at age 70, a gap of more than 30 years.

Conclusions. Our findings revealed enormous health inequalities in self-reported health, using a powerful and intuitive age-equivalence formulation. They highlighted the importance of considering health disparities in discussions about raising the retirement age, both in terms of fairness and feasibility.

Key Words: Health disparities—Older adults—U.S. workers—Retirement policy.

ONE of the major political issues in the United States today pertains to raising the retirement age for Social Security benefits. The full retirement age (FRA) for Social Security benefits has been gradually rising from age 65 so that for individuals reaching age 62 on or after 2022, the FRA will be 67 (Kingson & Altman, 2011). Proposals exist to further increase FRA to 70, which would reduce lifetime benefits compared with current law by an average of at least 15 and up to 20% (Congressional Budget Office, 2010). The further increase in FRA is justified as a mechanism for improving the financial viability of Social Security. Current projections indicate that the financial shortfall in the program is equivalent to 1% GDP or 2.72% of taxable payroll over the next 75 years (Social Security and Medicare Boards of Trustees, 2013). The projected financial difficulties are a function of population aging, falling fertility rates, rising income inequality, and slower economic growth (Social Security and Medicare Boards of Trustees, 2013). An alternative solution to the long-term concern over the solvency of the Social Security would be the removal of the earnings cap (maximum taxable earnings) on Federal Insurance Contributions Act, which is currently $117,000 (Diamond & Orszag, 2005).

The debate on increasing FRA has paid less attention to "differential consequences" of the proposed policy changes (Kingson & Altman, 2011). Although the population's increasing life expectancy has played a central role as a rationale for why individuals should retire later (Herd, 2011), the increases have not been equal across population subgroups. Disadvantaged workers, including low-status and minority workers, have life expectancies at 65 years considerably lower than white and high-status workers (Crimmins & Saito, 2001). The increased retirement age will thus cut a larger percentage of the disadvantaged groups' lifetime-expected benefits (Angel & Mudrazija, 2011). The implications of the proposed changes are all the more pronounced for disadvantaged workers because Social Security tends to comprise a greater proportion of their retirement income than it does for advantaged workers who are more likely to receive private pensions and investment income (Hendley & Bilimoria, 1999; Herd, 2005).

However, the issue of increased FRA does not just concern fairness; there is also a question of feasibility. Although people may live longer, those additional years may be characterized by health problems that limit their ability to work. Indeed, there is a large literature documenting higher levels

Received January 28, 2013; Accepted March 27, 2014
Decision Editor: Merril Silverstein, PhD

of disability among low-status and minority adults (Deaton & Paxson, 1998; Geronimus, Bound, Waidmann, Colen, & Steffick, 2001; Markides & Black, 1996). In short, these disadvantaged groups face both a shorter life expectancy and considerably earlier onset of poor health and physical limitations than do whites and those with higher educational attainment and income (Herd, 2006; Schoeni, Martin, Andreski, & Freedman, 2005). The health status of workers in midlife and beyond is critical for their continued ability to work to older ages—if their health status does not permit them to remain in the labor force, they may instead apply for disability benefits, thus cancelling some of the projected decreases in government expenditures for older Americans.

The limitation of the extensive literature on health disparities for policy debates is simply that the results tend to be presented in rather technical terms, as odds ratios or regression coefficients, which may fail to convey the extent of the disparities to nonspecialists. The goal of this brief report is to provide a clear demonstration of the extent of the health disadvantage faced by those with low educational attainment in later adulthood using age-equivalence language. The age-equivalent profiles we produce provide a powerful and intuitive comparison of the average age when different sociodemographic groups report a particular level of poor health or activity limitations.

Data and Method

Data Source

We used data from the 1997–2010 National Health Interview Surveys (NHIS). The NHIS comprises annual cross-sectional household surveys that collect extensive health information from a large sample representative of the civilian noninstitutionalized U.S. population. The household response rate varied from 79% to 90% across different interview years (NCHS, 2010).

The analysis sample was defined as U.S.-born non-Hispanic white and black adults aged 40–74. The age range was chosen to capture a sample of adults from mid-adulthood to beyond typical ages of retirement, following Warner, Hayward, and Hardy (2010). The sample included 341,060 respondents.

Variables

Health Measures.—Self-rated health (SRH) and activity limitations were used as indicators of general self-reported health status. Both measures are strong predictors of retirement decisions among older workers (Bound, 1989; Dwyer & Mitchell, 1999; Gamperiene, Nygård, Sandanger, Lau, & Bruusgaard, 2008). SRH was collected as a categorical variable with 5 levels from excellent = 1 to poor = 5. We dichotomized SRH as excellent, very good, and good versus fair and poor, a threshold standard in the literature (i.e., Martin, Schoeni, Freedman, & Andreski, 2007). Results (available on request) were equivalent if we retained the 5-point scale and treated it as continuous. Activity limitation was a dichotomous variable coded as 0 = *no limitation* versus 1 = *any limitations*. The measure was constructed by NHIS from questions that ascertained whether, due to a physical, mental, or emotional problem, the respondent was limited in, or had difficulty performing, the following: personal care needs (e.g., bathing), routine needs (e.g., shopping), the kind or amount of work, walking without special equipment, or problems in other activities. The multiple domains captured by the summary measure are important because the associations between specific activity domains and work ability may differ by individual and occupational characteristics (Nygård, Eskelinen, Suvanto, Tuomi, & Ilmarinen, 1991).

Education.—Education served as a measure of socioeconomic status. We chose education because it precedes income and occupation, is available for all adults regardless of age or employment status, is relatively stable across the life course, and is least affected by reverse causation (i.e., reductions in income or wealth due to declining health). Education was collected in completed years of schooling for respondents with less than a high school (HS) diploma and in schooling credentials for HS graduates or more. We trichotomized education as less than HS, HS or some college (including associate's degree), and bachelor's degree or more (BA). The first group included the general educational development diploma, which previous research has found comparable with HS dropouts in terms of health outcomes (Zajacova, 2011). We merged respondents with HS, some college, and associate's degrees because research has showed these groups to have similar health outcomes (Zajacova, Rogers, & Johnson-Lawrence, 2012).

Control Variables.—Age was collected in single years. Models were stratified by sex and race (non-Hispanic white and black), two key demographic characteristics that structure both educational attainment and health outcomes in the U.S. population.

Analysis

We estimated the age curves of the proportion reporting poor/fair health and activity limitation for each sex/race/education group using locally weighted scatterplot smoother (LOWESS), the most widely used nonparametric simple regression approach (Cleveland, 1979). The LOWESS fits a smooth curve through a scatterplot of a pair of variables. The curve is estimated using a weighted linear regression model for each data point, with weights that assign most importance to the central point and gradually diminish to points further away (see Andersen, 2009, for a summary of LOWESS estimation). We show results estimated without a logit transform of the dichotomous outcomes. The logit LOWESS results

were similar to the results shown in Figure 1 (and are available on request), but the logit scale of the outcomes was not substantively meaningful on the *y*-axes of Figure 1 shown below.

We also calculated the proportion of respondents reporting poor/fair health and activity limitations in 5-year age groups by sex, race, and education (the proportions are shown in Supplementary Table 1). The purpose of this ancillary calculation was to provide numerical estimates to complement the visual presentation of the findings in the body of the paper.

Results

Table 1 summarizes basic characteristics of the sample. Among adults aged 40–74, 15% reported less than a high school (HS) diploma, 58% were HS graduates or attended some college, and 28% earned a bachelor's (BA) or a post-baccalaureate degree. Over 14% reported fair or poor health, and 18% had activity limitations. The Pearson correlation (data not shown in the table) between the two health measures was 0.5, and tetrachoric correlation was 0.7, indicating that the two measures were related but each also tapped into distinct dimensions of health.

Figure 1 summarizes the key findings. The top row shows age-specific prevalence of fair or poor health for the 12 education–sex–race groups. At age 70, about 10% of respondents in the reference group—white men with a BA or higher degree—reported fair/poor health. The horizontal line allows a visual determination of the ages at which other groups reported comparable health levels. The only group that reached the 10% level of fair/poor health at a comparable age comprises white women with a BA or higher degree. Black men and women with a BA or higher degree experienced the 10% level of fair/poor health about 15–20 years younger than the reference group, at age 50–55.

The age gap was particularly large by education: white men and women with HS or some college reported the reference group's level of fair/poor health about 22–23 years younger, and black men and women reported the 10% level of fair/poor health at or prior to age 40, a gap of at least 30 years compared with the reference group of white men with at least a bachelor's degree. In all four race–sex groups, respondents with less than HS reported a considerably higher prevalence of poor/fair health by age 40 than the reference group did at age 70.

The bottom row shows findings for activity limitations. The age equivalents were slightly smaller for this health measure. At age 70, about 18% of the reference group—white men with a BA or higher degree—reported some activity limitations. Other demographic groups with comparable education experienced that level of limitations about 3–8 years younger. Respondents with HS or some college reported a comparable level of limitations 15–23 years younger, at age 47 (black women) to about 55 (white men). Finally, those with less than HS in each demographic group experienced a higher prevalence of activity limitations at age 40 than the reference group at 70, a gap of over 30 years.

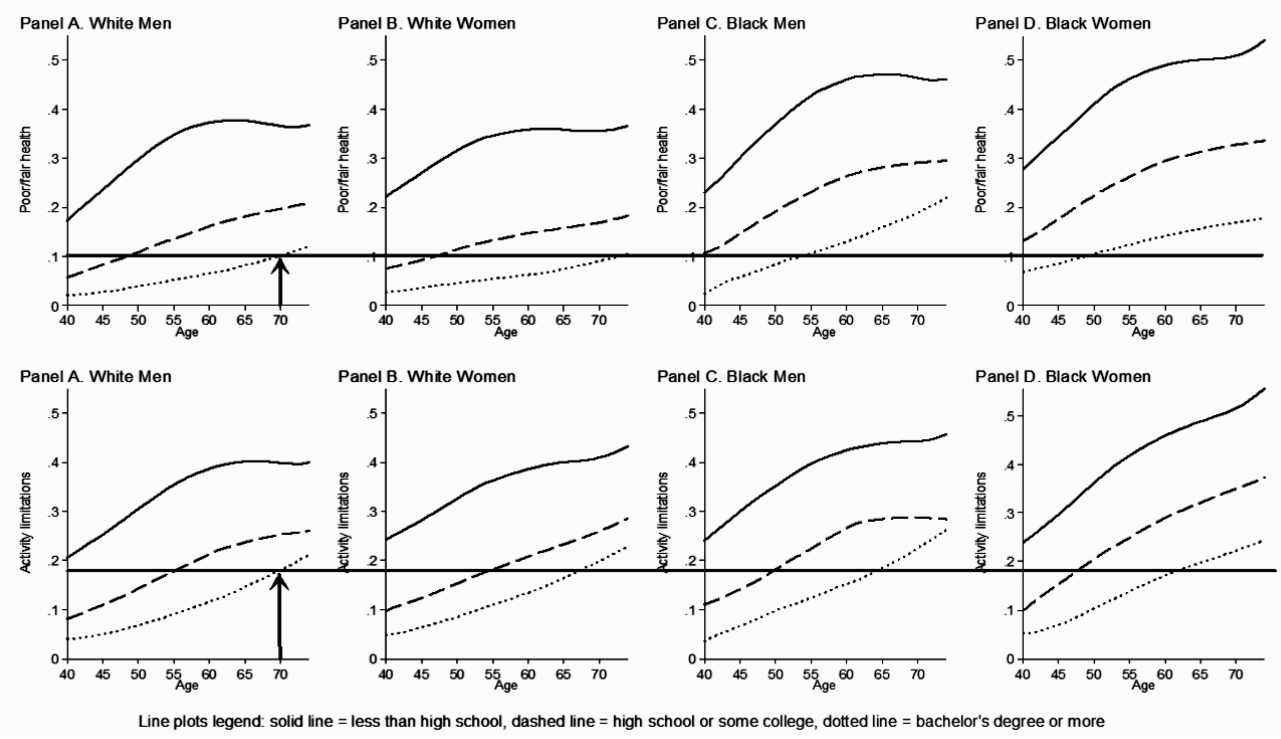

Figure 1. Prevalence of poor/fair health and activity limitations across age by race, gender, and education. Source: NHIS 1997–2010, U.S.-born non-Hispanic black and white adults aged 40–74. The horizontal line shows the level of health attained by white men with bachelor's degree or more at age 70. The plots show the approximate ages at which other sex–race–education groups attain a comparable prevalence of poor/fair health or activity limitations.

Table 1. Characteristics of the Analysis Sample

	White men	White women	Black men	Black women	Total sample
Proportion of total sample	43.0%	45.4%	5.1%	6.5%	100%
Age, mean (*SE*)	54.0 (0.04)	54.4 (0.04)	52.7 (0.07)	53.1 (0.08)	54.0 (0.03)
Education					
LHS	14.0%	12.6%	25.9%	24.2%	14.6%
HS	54.2%	60.7%	58.9%	59.1%	57.7%
BA+	31.8%	26.8%	15.2%	16.7%	27.7%
Health measures					
Poor/fair health	13.0%	13.3%	23.4%	26.1%	14.5%
Activity limitation	16.6%	18.0%	22.7%	24.6%	18.1%
N	138,967	148,072	22,853	31,168	341,060

Note. BA+ = bachelor's degree or more; HS = high school to associate degree; LHS = less than high school; SE = standard error. NHIS 1997–2010, U.S.-born non-Hispanic black and white adults aged 40–74. Adjusted for sampling design. Means (and *SE*s) are shown for continuous measures; proportions shown for categorical measures.

We also studied U.S.-born Hispanic and Asian adults. These groups were not included in the main analyses because of space constraints, small sample sizes, and because heterogeneity in these groups could make drawing conclusions problematic. The results for Hispanic adults are shown in the Supplementary Figure 1: their patterns were generally consistent with those for white and black adults. The findings (available on request) for Asian men and women were unreliable due to small sample sizes; for instance, there were only 69 Asian males with less than HS across the entire age range 40–74.

Discussion

This brief report used an age-equivalence approach to describe the health of middle-age and older adults across educational, sex, and race categories. We determined the prevalence of poor/fair health and activity limitations of an advantaged reference group—college-educated white men—at age 70; then, we estimated the ages at which other groups reported a comparable level of poor health. We found enormous gaps between the advantaged group and adults with fewer resources. Adults with a HS diploma or some college education experienced the reference groups' level of health problems about 15–30 years younger. This range captures the variation across health outcomes, sex, and race, with the largest age gap found for black adults in SRH. Respondents in all four sex/race groups without a HS diploma, who represent nearly 15% of the target population, reported worse health by age 40 than the reference group at age 70, an age gap of more than 30 years.

Proponents of increasing the FRA to 70 emphasize that Americans have longer and healthier lives compared with prior cohorts. However, compelling evidence shows that health inequalities at older ages are large and have been increasing further since at least the 1980s (Liu & Hummer, 2008; Schoeni et al., 2005). Indeed, there is evidence that both blacks and women exit the labor market at earlier ages due to increased disability (Brown & Warner, 2008; Flippen & Tienda, 2000; Hayward, Friedman, & Chen, 1996). The consequences of increasing the FRA to 70, given these race and sex disparities in health and labor force patterns, means that the effects of such a change would be disproportionately born by these groups.

The likely effect of an increase in the FRA is that women and minorities, who are already more likely to collect Social Security benefits prior to FRA, will see an even larger reduction in their monthly Social Security benefit. Under current law, collecting at age 62 (early retirement age) means that one's monthly benefit is 75% of what that benefit would be at age 67 (Social Security and Medicare Boards of Trustees, 2013). If FRA increased to 70, it would fall to 57%. Given that these groups already face retirement with more limited savings and private pension incomes, these further reductions in retirement income would be substantial. Existing evidence, including the evidence presented herein regarding the relatively poor health of these groups at very young ages, would not support the argument that these groups would work longer to help offset the benefit decline (Warner et al., 2010; Wise, 2004).

Our findings extend the large literature on health disparities by socioeconomic status (Groot & Maassen van den Brink, 2007; Herd, 2010; Mirowsky & Ross, 2003; Zajacova, Hummer, & Rogers, 2012). We find substantial health differences already among 40-year-old adults, highlighting that analyses need to start at earlier stages of the life course. These mid-adulthood socioeconomic differentials tend to further increase into older ages (House et al., 1994; Robert & House, 1996; Zajacova, Goldman, & Rodríguez, 2009). None of the previous studies, however, have expressed the disparities in age equivalents, a way of presenting results in a powerful, tangible, and intuitive way (Eaton, 2007). The age-equivalent formulation of the inequalities presented here adds compelling and easily interpretable evidence that the health of disadvantaged workers may not allow them to work until FRA, or at least not to the degree that the advantaged groups (including legislators) may consider feasible if they implicitly anchor their calculations to the health of their peers.

We want to note two caveats in the present analysis. First, the respondents were born in birth cohorts ranging from 1923 (for respondents in the 1997 NHIS wave, who were aged 74 years at interview) to 1970 (respondents in the 2010 wave, who were aged 40 years at interview). Our analysis, however, has not taken into account cohort (or period) changes, which could potentially impact the results we interpret as age patterns. A full age–period–cohort analysis (Lynch, 2003; Yang & Land, 2008) is beyond the scope of this brief report but should be undertaken in future studies. In ancillary analyses, we isolated a single 5-year birth cohort born between 1940 and 1944 and found the results to be similar to those shown for the full range of cohorts. Thus, cohort or period effects are unlikely to bias our results. A related issue is mortality selection, which removes frail individuals from earlier cohorts, resulting in systematic changes in the surviving cohorts toward better health. Since the mortality selection process is faster in disadvantaged groups due to their overall worse health, the process results in convergence in health between advantaged and disadvantaged groups at older ages. In our case, the selection process likely results in conservative estimates of the disparities compared with what the differentials would be had the frail individuals not been removed from the observed cohorts.

Another limitation pertains to the health measures. Although SRH and activity limitations are widely used and accepted measures of general health status (Idler, Russell, & Davis, 2000; Mossey & Shapiro, 1982), they are rough proxies of underlying physiological health and functional ability. Moreover, there may be systematic reporting differences across population subgroups (Bago d'Uva, Van Doorslaer, Lindeboom, & O'Donnell, 2008; Dowd & Zajacova, 2010) that could complicate the relationship between the self-reported measures and underlying physiological status or remaining life expectancy. Thus, our results should be interpreted cautiously. Studies extending our findings may want to use more objective measures, such as nurse-administered physical functioning tests. Another consideration is the link between our health measures and retirement decisions. We chose the two measures because they are good predictors of retirement decisions among older workers (Bound, 1989; Dwyer & Mitchell, 1999; Gamperiene et al., 2008), and they are available for all adults regardless of age and employment status at time of interview. One important benefit is that the measures capture the population at risk of early retirement due to poor health many years, perhaps decades, before these individuals ultimately contemplate or make such a decision (or could report the decision in a survey).

Conclusion

Our study has described large educational disparities in self-reported health among middle-aged and older adults in terms of age equivalents. The health differences between the most and least advantaged adults exceed 30 years in mid- to later adulthood. These disparities need to be considered by legislators when deciding on further increases in retirement age for Social Security, especially in light of alternative solutions such as an increase in the maximum earnings taxable for the Social Security Program. Our findings may also be informative for policy considerations of other old-age programs, such as Medicare, where health and health care use are a major component. In sum, the general argument that because we are living longer we should work longer is undermined by large and persistent health inequalities.

Supplementary Material

Supplementary material can be found at: http://psychsocgerontology.oxfordjournals.org/

Acknowledgments

All authors contributed significantly to this manuscript. Anna Zajacova designed the study, conducted the statistical analyses, and drafted the manuscript. Jennifer K. Montez helped develop the research question and revise the text of the paper; Pamela Herd provided expertise in health policy and revised the introduction and discussion sections of the paper.

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