

# *Age-by-Race Differences in the Health and Functioning of Elderly Persons*

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A review of health data identified four major trends in the elderly population: (a) a younger Black group that was more morbid than an older Black group, (b) an alternating pattern of Black morbid and robust age groups, (c) a Black disadvantage in health and functioning that was greater in race comparisons involving the Black morbid and less in comparisons involving the Black robust age groups, and (d) a Black health detriment that seemed to narrow at age 85. The trends suggest that age and health are more strongly related in the White elderly than in the Black elderly population. The trends also are compatible with the more rapid growth of Blacks aged 85 and over than any other group of the elderly, adverse mortality selection processes, and the racial mortality crossover. Issues for new research that will explain these four trends are discussed.

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*For some time it has been noted that age and the prevalence of several diseases are more closely associated in the White than in the Black elderly population (Kasl & Berkman, 1981). The strong increase in rheumatoid arthritis with age, for example, holds only for Whites; although Blacks have higher rates until age 64, Whites have higher rates in the 65 and older age group (Cobb, 1971). Prevalence rates for diabetes are much higher among Blacks than among Whites*

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until age 65 when the rates become almost identical (Adler, Bloss, & Mosely, 1966).

How widespread is this race difference in the relationship between age and health in the elderly population? The purpose of this article is to identify such Age  $\times$  Race differences in a variety of published data.

Age-race disparities in health warrant attention because they might explain the racial mortality crossover and the more rapid growth of Blacks aged 85 and over than any other group of the elderly (Taeuber & Rosenwaike, in press). The racial mortality crossover refers to the fact that Whites can expect to live longer than Blacks up to about age 80; after that, Blacks can expect to live longer than Whites (J. J. Jackson, 1985; J. S. Jackson, 1988; Manton, 1982; Manton, Patrick, & Johnson, 1987; Manton & Soldo, 1985; Markides, 1983, 1989; Markides & Machalek, 1984; Markides & Mindel, 1987; Meyers & Bayo, 1965; Nam, Weatherby, & Ockay, 1978; Spiegelman, 1967; Thornton & Nam, 1968; Wing, Manton, Stallard, Hames, & Tyroler, 1985).

Ten sets of tables were examined. Eight tables were from five published studies, and two tables were from U.S. Department of Health and Human Services publications. None of the five studies focused specifically on Age  $\times$  Race disparities in health. Because tables in these studies contained both age and race information, we were able to ferret out the Age  $\times$  Race differences that are of interest in the present article. Table 1 summarizes for each of the ten sources the investigators, data sources, measures, analysis procedure used by the original investigators, Black age and health status groups we identified, age groups in which we found the largest and smallest race differentials, types of age and race comparisons the tables allowed, and specific Age  $\times$  Race trends we identified. Seven of the ten sources of data were based on national probability samples, and three were based on purposive or regional samples. The indicators analyzed in the ten sources covered the major domains of health: objective, subjective, physiological, clinical, and functional.

Summarizing our review, four trends were apparent across data sources. First, a young sick group and an older healthier group in the Black elderly population were identified in eight of the nine sources that allowed within-race age group comparisons. Second, Black el-

Table 1  
*Age-Race Differentials in Health and Functioning Among the Elderly: Summary of Findings From Ten Sources of Data*

Investigators	Data source <sup>a</sup>	Health and functioning measures examined	Analysis procedure	Black age and health status groups identified <sup>b</sup>	Age groups largest race differentials	Age groups smallest race differentials	Comparisons allowed	Trends identified <sup>c</sup>
Gibson and Jackson (1987, in press)	NSBA	Chronic conditions Subjective	Percentages; logit Regressions; MCAs	65-74(S) 75-79(H) 80-84(S) 85 and over (H)	—	—	1, 2	1, 2
Manton and Soldo (1985)	DLSA (1955-1976)	Chronic conditions Clinical Psychological	Grade of membership	74.8(S) <sup>c</sup> 83.2(H)	—	—	1	1
USDHHS (1987)	Published Table 68	Functional	Total number of persons	65-69(S) 70 and over(H)	65-69	70 and over	1	1
USDHHS (1987)	Published Table 59	Chronic conditions	Persons per thousand	65-74(S) 75 and over(H)	65-74	75 and over	1, 3	1, 3

(continued)

Table 1 Continued

Investigators	Data source <sup>a</sup>	Health and functioning measures examined	Analysis procedure	Black age and health status groups identified <sup>b</sup>	Age groups largest race differentials	Age groups smallest race differentials	Comparisons allowed <sup>f</sup>	Trends identified <sup>g</sup>
Manton, Patrick, and Johnson (1987)	GAHSP	Chronic conditions Functional Psychological Therapeutic services	Grade of membership	65-74(S) <sup>d</sup> 75-79(H) 80-84(S) 90 and over(H)	—	—	1, 2	1, 2
Manton, Patrick, and Johnson (1987)	NHIS	Chronic conditions	Black-White relative risks	65-69 70 and over	65-69	70 and over	3	3
Gibson and Jackson (in press)	1984 SOA, NHIS	Chronic conditions Functional Subjective	Percentages	65-74(S) 75-79(H) 80-84(S) 85 and over(H)	65-74 80-84	75-79 85 and over	1-4	1-4
Manton, Patrick, and Johnson (1987)	NLTCS	Functional	Black-White percentage ratios	65-74 <sup>e</sup> 75-84 85 and over	65-74	75-84	1-4	3

Cormoni-Huntley et al. (1987)	NHEPESE	Chronic conditions Functional	Percentages	65-69(S)	75-79	1-4	1-4
				70-74(S)			
				75-79(H)	85 and over		
				80-84(S) 85 and over(H)			
Gibson and Jackson (1987)	ACL	Chronic conditions Functional Subjective	Percentages	65-74(S)	75-79	1-4	1-4
					80-84		
				75-79(H) 80-84(S) 85 and over(H)			

NOTE: Table adapted from Gibson and Jackson (in press).

a. NSBA = National Survey of Black Americans; DLSA = Duke Longitudinal Study of Aging; NHIS = National Health Interview Survey; GAHSP = Georgia Adult Health Services Program; SOA, NHIS = Supplement on Aging of the National Health Interview Survey; NLTC = National Longterm Care Survey; NHEPESE = New Haven Established Populations for Epidemiologic Studies of the Elderly; ACL = American's Changing Lives; USDHHS = U.S. Department of Health and Human Services.

b. S = Sick; H = Healthier.

c. Average age of each group

d. Ages predominating in the group

e. Not clearly sicker or healthier

f. 1 = Two Black age groups; 2 = More than two Black age groups; 3 = Age-by-race; 4 = Race comparison of those 85 and older.

g. 1 = A young morbid and an older more robust Black age group; 2 = Black age groups alternating in morbidity and robustness; 3 = race differentials larger in comparisons of Black morbid than black robust; 4 = Black health disadvantage narrower at age 85 and over than ages 80-84.

derly age groups that alternated in morbidity and robustness were found in five of the six sources that permitted comparisons of more than two Black age groups. Third, the Black disadvantage in health and functioning was greater in race comparisons involving a younger more morbid Black group and less in comparisons involving an older more robust Black group in all six of the sources in which Black-White comparisons by age were possible. Finally, a narrowed Black health disadvantage at age 85 was apparent in three of the four sources in which Blacks and Whites aged 85 and over could be compared. Overall, these trends suggest, as Kasl and Berkman (1981) noted, that the relationship between age and health is stronger in the White elderly than in the Black elderly population. In the following section, we expand on the four trends and the sources in which they were identified.

#### *Four Trends*

*A young morbid and an older more robust group in the Black elderly population.* Gibson and Jackson (1987) analyzed 580 individuals aged 65 and over from the National Survey of Black Americans (NSBA; Jackson, Gurin, & Tucker, 1980). Percentages in their table indicated that the age group 75 to 79 was healthier than a younger group aged 65 to 74 on three of five measures of health and functioning. The younger group was more likely to have multiple chronic conditions, be disabled by these conditions, and perceive themselves in poor health.

This trend was also apparent in seven other sources. Manton and Soldo (1985) analyzed 267 Black and White elderly individuals from the First Duke Longitudinal Study of Aging (DLSA) on twenty-one measures of objective, subjective, physiological, clinical, and psychological health. Their grade-of-membership analyses (Woodbury & Manton, 1982) identified two profiles that were disproportionately Black. The younger group (mean age 74.8) had more responses indicative of morbidity at the beginning and more pathological changes over the 21 years of the study than did the older group (mean age 83.2). As Manton and Soldo (1985) pointed out, the younger group was not only more morbid, they also died out of the study population more rapidly than did the older group.

Entries in Table 59, *Vital and Health Statistics: Current Estimates from the National Health Interview Survey* (Dawson & Adams, 1987) revealed that on 11 of 18 chronic conditions more Blacks per thousand in the age group 65 to 74 than in the age group 75 and over had ischemic heart disease, heart rhythm disorders, heart murmurs, bladder disorders, and hypertension.

Table 68, *Vital and Health Statistics: Current Estimates from the National Health Interview Survey* (Dawson & Adams, 1987), presented total numbers of persons in the population with activity limitations of various types. From our calculations, 27% of Blacks aged 65 to 69 were unable to carry on their major activity, whereas only 13% of those aged 70 and over were unable to do so. Thus the percentage of activity-limited persons in a younger group was double the percentage in an older group.

Manton et al. (1987) analyzed the Georgia Adult Health Services Program (GAHSP) data. The GAHSP is a regional sample of 583 community-living Blacks and Whites aged 65 and over on Medicaid long-term care benefits. Using grade-of-membership procedures, Manton et al. generated five health and functional status profiles. The profiles were sorted on measures of chronic conditions, physical and psychological functioning, and need for therapeutic health services. The five profiles in their table were described as follows.

Profile 1 was predominantly White, male, and young (a majority were aged 65 to 74). They had chronic obstructive lung disease and digestive problems, but few chronic conditions and little functional dependence. Profile 2 was predominantly Black, female, and older (aged 75 to 79). This profile had diabetes, heart problems, and four ADL limitations; but required few therapeutic services. Profile 3 was predominantly Black, female, and old (aged 80 to 84). They had circulatory and urinary tract problems; and the highest frequency of dementia and psychological and behavioral problems. The profile also had high levels of activities of daily living (ADL) impairment and used the greatest range of therapeutic services. Profile 4, about half Black and half White, was dominated by men and two age groups (65 to 69 and 80 to 84). This profile had the highest prevalence of cancer, stroke, neurological disorders, and hip fractures, and the greatest number of medical treatments. The group also was highly functionally impaired

and the most bedfast. Profile 5, disproportionately Black and female, was dominated by two other age groups (75 to 79 and 90 and over). This profile had sensory problems, arthritis, few impairments, few explicit acute medical problems and no dementia. They also required few therapeutic services. Comparing the characteristics of these five profiles, then, indicates that Blacks in the age groups 65 to 74 and 80 to 84 were more morbid than those in the age groups 75 to 79 and 90 and over.

Gibson and Jackson (in press) studied 852 Blacks aged 65 and over from the 1984 Supplement on Aging (SOA) of the National Health Interview Survey (Fitti & Kovar, 1987). They analyzed measures of chronic conditions, functional health, and subjective health in four age groups (65 to 74, 75 to 79, 80 to 84, and 85 and over). Percentages in their table showed that the youngest group (aged 65 to 74) was more likely than an older group (aged 75 to 79) to have multiple chronic conditions and perceived poor health.

Cornoni-Huntley, Brock, Ostfeld, Taylor, and Wallace (1987) published percentages of persons in the New Haven Established Populations for Epidemiologic Studies of the Elderly 1982 Survey (NH-EPESE) with various health problems. The NH-EPESE is a regional sample containing 526 Blacks, 2,213 whites, and 62 "other" non-Whites. We calculated percentage point differences between Black women and White women from Cornoni-Huntley et al.'s tables. A young morbid and an older more robust group in the Black sample was identified on eight of fifteen measures: difficulty with bathing, dressing, walking across a room, and using the toilet; high blood pressure, cancer, diabetes, and heart attack.

Gibson and Jackson (1987), analyzing 350 elderly Blacks from the Americans Changing Lives (ACL; House, 1986) data set, compared four age groups on five health indicators: difficulty with ADLs, number of chronic conditions, general functional limitation, satisfaction with health, and self-ratings of health. They noted that an older group, aged 75 to 79, was more likely than a younger group, aged 65 to 74, to perceive their health as excellent and to be completely satisfied with their health.

Manton et al.'s (1987) table containing Black-White percentage ratios based on data from the National Long Term Care Survey



(NLTC) was the single exception in identifying a young sick and an older healthier group in the Black population. Because the NLTC is a sample of persons aged 65 and over who needed assistance with ADLs and IADLs, the trend might have been obscured by the exclusion of the healthier Black group, aged 75 to 79. The middle comparison group used by Manton et al. in the table also might have concealed the trend. This group was a mixture of the robust (aged 75 to 79) and the more morbid (aged 80 to 84).

*Black elderly age groups that alternated in morbidity and robustness.* In Gibson and Jackson's (1987) tables reporting the results of logit and multiple-classification analyses based on the NSBA data, there was a counterintuitive pattern of three age groups that were alternately healthy and sick. The healthier and more able group (aged 75 to 79) was bordered by two sicker more disabled groups (aged 65 to 74 and 80 and over). These peculiar inflections of the data were even evident after their analyses controlled for some common correlates of age, health, and functioning: income, gender, social health, and mental health.

This intermittent pattern in the older Black population apparently is not limited to three age groups. Gibson and Jackson's subsequent logit regressions (in press) turned up a similar pattern in four age groups. The probability of poor health and functioning was lower among those aged 75 to 79 than those aged 65 to 74; and lower among those aged 85 and over than those aged 80 to 84.

The pattern of every other age group in the Black elderly population that is healthy also was evident in four other sources. In Manton et al.'s (1987) table based on the GAHSP data, Blacks in the groups aged 65 to 74 and 80 to 84 were more morbid than Blacks in the groups 75 to 79 and 90 and over.

Gibson and Jackson's table (in press), based on analyses of the SOA data, showed that a younger group of Blacks (aged 65 to 74) was less likely than an older group (aged 75 to 79) to be healthy. Moreover, those aged 85 and over were healthier than those aged 80 to 84 on two of three measures of chronic conditions, functioning, and subjective health.

Identical Black age groups were successively morbid and robust on seven of fifteen measures of chronic conditions and functional limitation in the Cornoni-Huntley et al. (1987) tables. These were difficulty with bathing, dressing, walking across a room, toileting, and walking a half mile; high blood pressure and heart attack.

Gibson and Jackson's (1987) analyses of the ACL data revealed that Blacks aged 75 to 79 were more likely than Blacks aged 65 to 74 to perceive their health as excellent and to be completely satisfied with their health; those aged 85 and over also were more likely than were those aged 80 to 84.

*The Black disadvantage in health and functioning that was greater in race comparisons involving a younger more morbid Black group and less in comparisons involving an older more robust Black group.* The Black detriment in health was greater in a younger group than in an older group of the elderly population for 13 of 17 chronic conditions in Table 59, *Vital and Health Statistics: Current Estimates from the National Health Interview Survey* (Dawson & Adams, 1987). Interestingly, Blacks aged 75 and over actually had the health advantage over their White age-mates on 11 of the conditions.

A larger Black health detriment in a younger group than in an older group of the elderly population also was found in five other sources. Manton et al. (1987) calculated relative risks for Blacks based on White morbidity rates for several conditions from National Health Interview Survey data (NHIS). The Black disadvantage was greater in the age group 65 to 69 than in the group aged 70 and over for hypertension, diseases of the circulatory system, and diabetes.

Gibson and Jackson's (in press) table based on the SOA data indicated that the Black handicap in health was greater in the age group 65 to 74 than in the age group 75 to 79. The trend was evident on all three measures that they examined: chronic conditions, difficulties with activities of daily living, and self-rated health. On two of the measures, difficulties with activities of daily living and self-rated health, the Black handicap also was greater in the age group 80 to 84 than in the group 85 and over.

Manton et al. (1987) calculated Black-White percentage ratios from the NLTCs. We noted that Black men aged 65 to 74 were nearly twice

as likely as Whites that age to be disabled; Blacks and Whites were about equally likely to be disabled at ages 75 to 84; and at ages 85 and over, Blacks were about one and a half times as likely. Because the NLTCS is a sample of the disabled, the figures suggest that even in the disabled elderly population the Black disadvantage in functioning is greater in a younger group than in an older group.

The trend also was identified on 10 of 15 measures in the Cornoni-Huntley et al. tables: bathing, dressing, walking across the room, walking a half mile, toileting, heavy housework, hypertension, cancer, diabetes, and heart attack.

In Gibson and Jackson's (1987) research based on the ACL data, the trend was clear on all five measures that they analyzed: activities of daily living, general functional limitation, number of chronic conditions, self-rated health, and satisfaction with health. For example, Blacks aged 65 to 74 were about twice as likely as Whites that age to be extremely physically limited, Blacks and Whites aged 75 to 79 were about equally likely to be limited. Blacks aged 75 to 79 actually had the health advantage over their White age-mates in regard to general functional limitation and satisfaction with health.

*A smaller Black health disadvantage in the age group 85 and over.* Confidence in this trend is weakened somewhat by small numbers of Blacks aged 85 and over in the relevant datasets (the NH-EPESE, SOA, and ACL). Nonetheless, the trend was observable in each of these sources. Gibson and Jackson's table (in press) based on the SOA data showed that Blacks aged 80 to 84 were more likely than Whites in that age group to have multiple chronic conditions and extreme difficulty with activities of daily living. In the age group 85 and over, however, Blacks and Whites were about equally likely to do so. The Black detriment in self-rated health similarly decreased in the 85 and over age group. Interestingly, statistical tests in the Gibson and Jackson table indicated that the relationships between age and number of chronic conditions, and between age and subjective health were significant for Whites but not for Blacks. This actually strengthens the argument that age and health are more closely related in the White elderly than in the Black elderly population.

An identical trend was apparent in the Cornoni-Huntley et al. tables based on the NH-EPESE data; the Black health disadvantage was smaller in the 85 and over age group. The trend was observed on 5 of 15 measures: heart attack, bathing, dressing, climbing stairs, and walking a half mile.

A Black-White difference that was smaller among individuals aged 85 and over than among those aged 80 to 84 also appeared in Gibson and Jackson's (in press) analyses of the ACL data. The trend was apparent on measures of ADLs, general functional limitation, self-rated health, and satisfaction with health.

### *Discussion*

This article reviewed 10 sources of national and regional health data on the elderly. The compelling summary is that four unusual Age  $\times$  Race trends in health and functioning were identified across multiple and diverse sources of data. These trends lend support to the suggestion that the relationship between age and health is stronger in the White elderly than in the Black elderly population.

A limitation of the review, however, is that tests of significance could not be performed on the data. This should be on the agenda for future research in the area. Repeated observations of the same trends, however, increase confidence in their existence. What are some factors that might explain these Age  $\times$  Race irregularities in health and functioning? Might they be due to adverse mortality selection processes, Age  $\times$  Race differences in institutionalization, cohort differences, or Age  $\times$  Race differences in psychosocial risk factors for health and functioning?

In adverse mortality selection processes, a young morbid group of a disadvantaged population dies out rapidly leaving an older more select group of survivors (Manton, 1980, 1982; Manton et al., 1987; Markides, 1989; Wing et al., 1985). The alternating groups in the Black population we identified might mean that the older but healthier group, aged 75 to 79, are the survivors of high death rates among the younger but less healthy group aged 65 to 74. Manton et al.'s (1987) findings from the first DLSA reinforce this idea—mortality was more rapid in a younger group of Black elderly than in an older group. Another sick

group, aged 80 to 84, may reflect the onset of chronic illnesses, resulting in higher death rates at those ages; and a healthier group 85 and over may be the survivors of this second mortality sweep. A selection process that continues on in this way, in fact, could explain the narrowed health disadvantage of Blacks we found at ages 85 and over. This decreasing health disadvantage at very old ages, in turn, could explain the more rapid growth of Blacks aged 85 and over than any other age group of the elderly, and the racial mortality crossover at about that age.

Might the irregular age-race trends in health and functioning merely be a matter of age-race differentials in institutionalization that leave the more robust of certain age-race groups in the community? Whereas Whites aged 65 to 74 are slightly less likely than Blacks that age to be in nursing and personal care homes, Whites aged 75 to 84 are about 1.5 times more likely than Blacks that age to be so institutionalized. The race disparity continues to increase, and at age 100, Whites are almost twice as likely to be institutionalized (U.S. Department of Health and Human Services, 1988). After age 100, the institutionalization ratio increases to about four times as likely for Whites as for Blacks (U.S. Bureau of the Census, 1987).

Given this steady increase in the race disparity in institutionalization in successively older age groups, morbidity and disability should increase accordingly among Blacks left in the community and decrease among their White counterparts. The result should be greater race differences in health and functioning at ages 85 and over, and smaller differences at the younger ages 65 to 74. The trend we identified, however, was just the reverse. There was a larger Black disadvantage in the youngest group and a smaller disadvantage in the oldest group. Thus age-race differences in institutionalization are not likely causes of the observed age-race differences in health and functioning.

What about the reverse argument that the age-race differences in health and functioning cause the disproportionate institutionalization of the races? This argument is partly supported by two trends identified across sources of data. First, the largest Black disadvantage in health and functioning was found in the age group in which Blacks are more likely than Whites to be institutionalized (ages 65 to 74), and a

narrowed Black disadvantage was found in the age group in which Whites are much more likely than Blacks to be institutionalized (ages 85 and over).

Second, the narrowed Black health disadvantage in the 85-and-over group was more often found on measures of functional health than on measures of chronic conditions. Functional ability might be more important than chronic illness in the decision to maintain older individuals in the community. Thus a larger Black functioning disadvantage among those 65 to 74 and a relatively smaller Black disadvantage at ages 85 and over could account for the race disparity in institutionalization in these two age groups. The argument is weakened, however, by race differences in health and functioning in the age groups 75 to 79 and 80 to 84 that do not correspond to race differences in institutionalization in those two groups. Thus there is not much evidence of a relationship between age-race differences in health and functioning and age-race differences in institutionalization.

What else might these unusual Age  $\times$  Race trends mean? They could reflect cohort differences in lifetime risk factors for health and functioning. What conditions were more favorable in the histories of some Black age cohorts than others? Might there have been less detrimental environmental exposures, more healthful behaviors, greater access to quality health care, lower levels of stress and distress, for example, in some cohorts? Or might these trends reflect Age  $\times$  Race differences in the aging process (Markides, 1989)?

Might differences in the distribution of psychosocial risk factors in the eight age-race groups account for the observed Age  $\times$  Race differences in health and functioning? Inadequate social support, ineffective use of the formal health care system, and nonhealthful behaviors (e.g., smoking, excessive alcohol consumption, and lack of physical activity) all have been found to consistently increase the risk of disease, poor physical functioning, and mortality (Antonucci & Jackson, 1987; Berkman & Breslow, 1983; Blazer, 1982; Cohen & Syme, 1985; House, Landis, & Umberson, 1988; Kasl & Berkman, 1981; Satariano & Syme, 1981).

Different ways in which risk factors affect health in age and race subgroups of the older population also could illuminate the observed Age  $\times$  Race differences in health and functioning. The evidence, in

fact, is convincing that both age and race change relationships among risk factors, health, and mortality (Kasl & Berkman, 1981; Rowe & Kahn, 1987). An example of an age-risk factor-health interaction is the relationship between blood pressure and major coronary events that strengthens with age, whereas the relationship between cigarettes, relative weight, and coronary events attenuates with age (Kasl & Berkman, 1981). Examples of race-risk factor interactions are (a) the lack of social integration that is less of a risk factor in the mortality of older Blacks than older Whites (House et al., 1988), and (b) informal network crises that only negatively affect the health of the Black elderly (Krause, 1987).

In summary, cohort differences in risk factors for health and functioning, Age  $\times$  Race differences in how psychological risk factors operate on health and functioning, and adverse mortality selection processes all bear special scrutiny as explanations of the observed age-race irregularities in health and functioning. New research also needs to address two limitations of the data summarized in this review: (a) small numbers of Blacks aged 85 and over in the samples and (b) the possible confound of substantive and methodological Age  $\times$  Race differences due to differences in sample designs. Because no data set exists with the relevant health and risk factor variables and with adequate numbers of the Black oldest old, new samples are called for. It is hoped that this review has provided both a starting point and some guiding issues for such new data collections.

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