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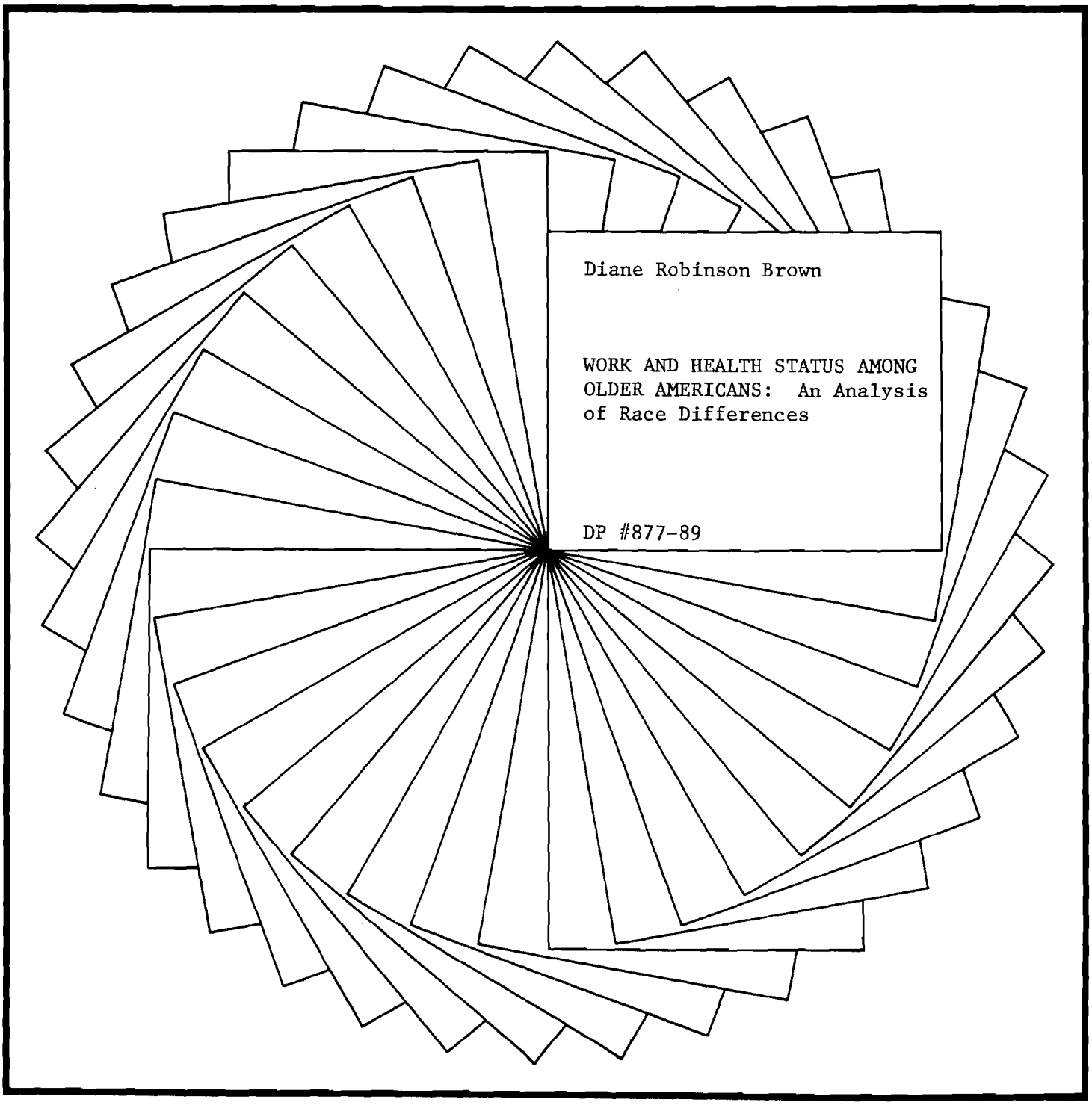

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WORK AND HEALTH STATUS AMONG OLDER AMERICANS: AN ANALYSIS OF RACE DIFFERENCES

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ABSTRACT

As a result of expanded life expectancies, early retirement programs, and supportive public policies, older Americans in recent decades are spending longer periods of time out of the work force and are increasing their reliance on social security and other retirement benefits. Employment among older persons is viewed as an alternative for maintaining levels of income while reducing the costs of retirement and social security programs. The health status of older persons is, however, often cited as a reason for not working, and there are differences by race in health status. This paper attempts to address this issue by examining the relationship between health and employment among older Americans aged 55-74. It investigates health as a predictor of employment relative to such other factors as sociodemographic background and economic status. Data from the Supplement on Aging to the National Health Interview Survey are used to conduct the analyses. Findings are discussed in light of policy implications pertaining to the health and employability of older persons, with specific consideration of the differences between older blacks and whites.

WORK AND HEALTH STATUS AMONG OLDER AMERICANS: AN ANALYSIS OF RACE DIFFERENCES

INTRODUCTION

Of major concern to public policymakers and analysts are the burgeoning costs of providing economic support to the rapidly expanding older segment of the U.S. population. For more than three decades, considerable public attention and effort have been directed toward improving the economic well-being and quality of life for older Americans through enhancement of social security and retirement programs, including Medicare as well as other cash and noncash benefits. The costs of these efforts have been increasing, while the population at which they are aimed has also been growing. For example, since 1960 the amount of federal spending on the elderly has doubled; by 1985, 28 percent of the federal budget was devoted to direct benefits for older persons. Of those benefits, spending on health care for older persons has surpassed expenditures for retirement income (U.S. Senate, Special Committee on Aging, 1988).

Expanding Older Population

Growth in the number of persons 65 years of age and older is among the most significant demographic shifts occurring in the U.S. population in the latter part of the century (U.S. Senate, Special Committee on Aging, 1988). In 1900, only 4.1 percent of the population was 65 years of age or older, but by the year 2030 it is projected that one out of every five Americans is likely to be of that age (Bureau of the Census, 1983). The trend toward increasing longevity applies to the black as

well as the white population. During the last decade, the older black population (65 or more) expanded by about one-third, whereas among whites, the elderly segment increased by one-fourth (Bureau of the Census, 1983). Comprising 8.5 percent of the population 55 years of age and older in 1982, blacks are expected to reach 14 percent of that population by the year 2050 (Bureau of the Census, 1983).

Although the older black population is growing at a faster rate than that of whites because of higher fertility and greater advances in life expectancy, there remain disparities by race in longevity and health status. In 1983, the average life span increased to 65 years for black men and to 74 years for black women; blacks still lagged behind their white counterparts by seven and five years, respectively (U.S. Department of Health and Human Services, 1985a).

The differences by race in mortality prior to age 40 are primarily due to excess deaths among blacks from cancer, heart disease, stroke, homicide, unintentional injuries and chemical dependencies (U.S. Department of Health and Human Services, 1985a). The higher rates of mortality are exacerbated by particular morbidity patterns that differ significantly by race. For example, the prevalence of diabetes is 33 percent higher in the black population than among whites (Roseman, 1985). Among black women 45 to 64 years of age, the prevalence of hypertension is 85 percent higher than among comparable white women, and black men have significantly higher rates of hypertension than white men. The higher prevalence of diabetes and hypertension among blacks increases their relative risk for death and decreases life span in comparison to whites. Underlying reasons for greater morbidity and mortality among blacks are attributed in great part to socioeconomic

status, specifically lower levels of income and education (U.S. Department of Health and Human Services, 1985a).

Economic Well-Being of the Elderly

As life expectancy increases and early retirement options expand, the length of time that many older Americans will spend out of the work force enlarges. Concomitantly, these factors contribute to increasing the length of time that older persons rely upon retirement income and other sources of nonearned income such as pensions, social security, interest, Medicare, etc. Available economic resources during this extended period of life are, however, largely influenced by past experiences, and these experiences differ considerably among subgroups of the population.

Historically, the economic well-being of elderly whites has been higher than that of blacks and higher among males than females. For example, the median income of white males aged 65 years and older in 1986 was $12,131, but was $6,757 for black males, $6,738 for white females and $4,508 for black females (U.S. Senate, Special Committee on Aging, 1988).

With regard to sources of income, more than 90 percent of older persons rely on retirement benefits from social security (Grad, 1984), while only 2 percent of the elderly rely upon pensions for more than half of their money income. Racial differences in economic well-being are reflected in the differential utilization of sources of income. A 1983 study found that among elderly black householders, 47 percent of income was derived from social security, 27 percent from earnings, 10 percent from pensions, 10 percent from other sources, and 5 percent from

property. Among elderly white householders, only 37 percent of money income was obtained from social security, 25 percent from earnings, 23 percent from property, 13 percent from pensions, and 2 percent from other sources (Bureau of the Census, 1983).

Overall, the general pattern of fewer economic resources among older blacks in comparison to whites stems from differences in life experiences which lay the groundwork for economic well-being in old age. Among blacks, overall earnings and economic resources over their lifetimes are likely to be substantially less than that of their white counterparts. This is evidenced in the greater clustering of employed blacks than whites in lower-paying, blue-collar, household, service, semi-skilled, and unskilled jobs as well as their higher rates and longer periods of unemployment (Bureau of Labor Statistics, 1987a). Consequently, blacks are more likely than whites to have work histories marked by limited or no retirement benefits as well as lower contributions to the social security system. The significant difference in economic resources of older blacks and whites is also reflected in the gap in level of educational attainment. Although educational attainment has increased among both blacks and whites in recent decades, it is still lower among blacks than whites, especially among the older age groups (U.S. Senate, Special Committee on Aging, 1988).

All of these factors--work history of low-paying jobs, greater unemployment, and lower levels of education--contribute to diminished levels of economic well-being over the lifetime for blacks and have a cumulative effect for their economic status in their older years. Given overall racial differences in economic circumstances within a life-span context, it is not unexpected that the expanding older segment of blacks

will continue to experience greater risk of low income and poverty than older whites. Moreover, increased longevity enhances that risk.

It is important to note that recent studies report that the economic resources of older persons are now approximating those of the nonaged (Radner, 1988; U.S. Department of Health and Human Services, 1985c). However, they do not provide analyses by race to determine the extent to which elderly blacks are affected. The economic status of the elderly is more varied than any other age group and includes unusually high proportions of elderly persons whose incomes and economic resources are below or just below poverty level (U.S. Senate, Special Committee on Aging, 1988).

Older persons who rely primarily on social security are apt to be the poorest. In 1981, over 30 percent of those with only social security retirement income were considered poor (Bureau of the Census, 1983). Lowest poverty rates were reported for older persons who relied on wage and salary income. Income from social security is generally too low to cover even routine living expenses, yet in recent decades, social security has become a greater proportion of economic resources for the elderly than have earnings. In 1968, social security provided 22.9 percent of the share of income for elderly families; this increased to 34.3 percent in 1983. In the same time period, earnings dropped from 48.2 percent to 28.0 percent (U.S. Senate, Special Committee on Aging, 1988).

Poverty varies by race and gender as well as age (Bureau of the Census, 1983). In 1984, females accounted for more than half (58.9 percent) of the elderly population, but nearly three-quarters (71.2 percent) of the elderly poor (U.S. Senate, Special Committee on Aging,

1988). Similarly, rates of poverty are greater among elderly blacks and Hispanics than among whites. In 1986, 31 percent of elderly blacks were in poverty in comparison to 10.7 percent of elderly whites and 22.5 percent of the Hispanic elderly (U.S. Senate, Special Committee on Aging, 1988). Older persons who can work until about age 70 are able to reduce the likelihood of being poor. Those who worked all year had half the poverty rates of those who did not work at all during the year (Bureau of the Census, 1987).

Unemployment among the Elderly

Enhancing employment opportunities among the elderly is viewed as one mechanism for addressing their income needs (White House Conference on Aging, 1981b). A fairly low percentage of elderly persons continue to work after age 65, however--approximately 13 percent of both blacks and whites (American Association of Retired Persons, 1986). On the other hand, when aggregate numbers are considered, older black males are less likely to work than older white males. Among white men aged 55-59, the labor force participation rate in 1984 was 81.6 percent, but was 68.3 percent for black men. For those aged 65-69, the percentage among white males, 24.8 percent, also exceeded that of black males, 21.4 percent. In comparison, older black females were more likely to work than similar whites (Bureau of the Census, 1983). The U.S. Department of Labor (1985) reported that in 1984, 49.4 percent of white females and 53.7 percent of black females 55-59 years of age were employed. At ages 65-69, those figures declined to 14.9 percent and 14.5 percent, respectively. Beyond age 70, racial differences remain small.

Although the majority of older persons who are not working consider themselves retired, there are some who view themselves as unemployed. The rates of unemployment are higher for older black than white women, but lower for black than white men: in 1985, unemployment for black males over 65 was 1.3 percent, in contrast to 5.5 percent for white males. Unemployment in 1985 was 6.6 percent among white women 65 or older, but 11.0 percent among their black counterparts (Bureau of Labor Statistics, 1987a).

In addition to lack of employment opportunities, other factors that may influence employment among older persons include economic, sociodemographic, sociopsychological, and health factors. According to a survey conducted by the American Association of Retired Persons, the most frequently cited reason is "not wanting or not having a need to work" (AARP, 1983). Although these data were not broken down by income, race, or other factors, one-third of respondents who were retired expressed a desire to be working. Among employed older persons in the AARP survey, 77 percent indicated a preference for employment over retirement (AARP, 1983). Retirement decisions are also influenced by social norms and expectations (Rosenwaike, 1985) as well as family and friends (Hwalek, Firestone & Hoffman, 1982). Yet, on a very practical level, being employed after becoming eligible for retirement benefits is influenced by the ability to gain more money income from work than from social security and/or pension benefits (Bureau of the Census, 1983).

With regard to employment for older persons, it is important to point out that the labor market, with its expanding technology, is not necessarily geared to accommodating their needs (White House Conference on Aging, 1981b), and in many instances older persons are viewed as

competing for jobs with younger workers. Even if such barriers to the employment of older persons are removed, there remains the potentially limiting factor of health (Herzog, 1978; AARP, 1983). Findings from several studies indicate that a considerable number of older persons do not work or retire early because of poor health or disability (AARP, 1983; Kingson, 1983). Although there is an abundance of data on the health problems of the elderly in general, very few data have been reported on the specific nature of the health problems of those who are not working--that is, the range of ability or disability. Similarly, very little has been reported on the health conditions and physical limitations of those who continue to work, in particular by employment status. The data on racial differences in employment among the elderly is meager, despite significant racial differences in health, economic status, and sociodemographic background (U.S. Department of Health and Human Services, 1985a).

The following analysis was undertaken to examine health, along with sociodemographic characteristics and family income, as predictors of employment among older persons, and then to ascertain if there were differences by race. The analysis also identifies the relative contribution of these factors in predicting the employment of older persons.

METHODS

Data and Sampling

The data for this analysis come from the Supplement on Aging to the 1984 National Health Interview Survey (SOA-NHIS; see Fitti & Kovar,

1987). While the primary purpose of the NHIS survey is to provide national data on the incidence of illness and injuries, the prevalence of chronic conditions, the utilization of health services, and other health-related topics, the Supplement on Aging was added to it in response to a growing concern by public agencies to have health information about older people. Specifically, the objectives of the SOA were to characterize the health and social status of persons aged 55 years and over in the United States, and to ascertain how psychosocial and environmental factors influence health and aging in a changing society.

A multistage probability design was utilized to select respondents from the overall NHIS survey upon which to base national estimates for the civilian noninstitutionalized population residing in the United States. A detailed description of the sampling methodology is published elsewhere (U.S. Department of Health and Human Services, 1985b). A total of 16,697 persons from the 39,996 households of the 1984 NHIS were chosen for the SOA interview. Face-to-face household interviews were completed with 16,148, or 96.7 percent of the SOA subsample, from January 1984 to January 1985.

Only persons between the ages of 55 to 74 years of age were included in this analysis. Given that very few persons 75 years and older are employed (3.7 percent of blacks, 3.8 percent of whites in SOA samples), those persons were excluded. Also excluded were respondents in the SOA who were neither black nor white (n = 262). This resulted in a total sample of 11,482, of which 910 or 7.9 percent were black and 10,572 or 92.1 percent were white. These percentages are comparable to

those reported by the U.S. Senate, Special Committee on Aging (1987) concerning the racial composition of the elderly population.

Instrumentation

The NHIS survey instrument was augmented for the SOA with specific items focusing on older persons. For the SOA, various items were used from other fairly well-known national studies such as the National Survey of the Aged, the National Health and Nutrition Examination Study, the National Nursing Home Survey, the Survey of Income and Program Participation, and the Annual (now American) Housing Survey, among others. Specific documentation on the SOA instrument is provided by Fitti and Kovar (1987).

Dependent Variables

Employment status was utilized as the dependent variable. It was primarily ascertained by response to the question, "What was 'R' doing most the past 12 months, working at a job or business, keeping house, going to school or something else." For the multivariate analysis, the four responses were categorized into a dichotomous employment-status variable where "1" was working and "0" was not working. Additional questions on employment were asked pertaining to current occupation, current industry of employment, number of hours worked and perception of retirement/employment status.

Independent Variables

A number of independent variables were examined as factors affecting employment. These included items focusing on economic status, health status, personal preferences regarding work, and sociodemographic background.

Economic status. Among the questions pertaining to economic status was that of total family income, e.g., combined family income during the past 12 months, including money from jobs, social security, retirement income, unemployment payments, public assistance, interest, dividends and so forth. The data set included the NHIS poverty index, calculated according to family size, number of children under 18 years of age, and family income, using the 1983 poverty levels published by the Bureau of the Census in August 1984. Levels of family income were significantly higher for older whites (median = $17,000) than older blacks (median = $8,000), and a greater portion of blacks (31.4 percent) than whites (7.9 percent) had incomes below the NHIS poverty index.

Health. The measure of health status focused on the total number of functional limitations. These limitations were based upon the respondent's self-evaluation of ability to do certain things when working at a job or business or performing chores around the house. The questions covered ten functional activities ranging from "walking for a quarter of a mile without resting" to "lifting or carrying something as heavy as 10 pounds." This is a widely used measure of health status which has been applied in numerous surveys conducted by the National Center for Health Statistics (Fitti & Kovar, 1987). With regard to health, older blacks had significantly more functional limitations (mean

= 2.41, s.d. = 2.75) than whites (mean = 1.58, s.d. = 2.35). This pattern held among the percentages of those with no functional limitations (59.3 percent for whites and 41.2 percent for blacks).

Personal preferences. As personal desires and expectations also influence employment circumstances, an item was included to ascertain if the respondent would be willing to work. These responses were analyzed for those nonworking individuals who previously indicated that they could work.

Sociodemographic background. Age, education, marital status, and region of the country were included as indicators of sociodemographic background.

As anticipated from previous studies, the sociodemographic, economic, and health characteristics of the respondents varied significantly by race. Women comprised 55.2 percent of white respondents and 58.4 percent of blacks aged 55-74. More white respondents 55-74 years of age (70.0 percent) were likely to be married than blacks (50.3 percent), and a greater percentage of blacks than whites (44.4 and 24.8 percent respectively) were apt to be separated, divorced, or widowed. Never-married persons constituted a small percentage of both black (5.3 percent) and white (4.3 percent) respondents. In terms of educational attainment, 60.8 percent of whites, in comparison to 26.6 percent of blacks, had at least a high school education. The mean level of educational attainment for whites (11.30 years, s.d. = 3.12) was significantly higher than that of blacks (8.60 years, s.d. = 3.59). For this sample, the average age of blacks was 65.43 (s.d. = 5.43) and whites 65.30 (s.d. = 5.47). This slight age difference by race was not statistically significant.

Over half (56.6 percent) of black respondents were residents of the South; few lived in the West (8.6 percent). A considerably higher percentage of older whites (17.7 percent) than blacks lived in the West, although the greatest percentage of older whites (31.2 percent) also resided in the South.

Procedures

Although a focal point of the study was the analysis of racial differences in factors affecting employment among older persons, the data were also examined by gender. Because females comprise more than half of the elderly population and have greater longevity as well as lifelong work patterns that differ from men, it was decided not to overlook gender differences in the comparative racial analysis.

A variety of univariate statistics were used to obtain descriptive analyses. Relationships among variables were examined using bivariate statistical procedures, consisting primarily of Chi-square analyses, analyses of variance, and Pearson's rho. For the multivariate analyses, logistic regression was used for the dichotomous employment-status variable. The fact that the SOA data used for these analyses are cross-sectional places limitations on the scope of the analysis.

RESULTS

To begin the analysis, employment status was examined by race for males and females 55-74 years of age in the SOA sample. The majority of older persons were not employed, and there were no significant differences by race when males and females were combined. However, the

percentage of those who were employed varied significantly by race and gender. White males were the most likely to be working, at 40.5 percent, followed by black males (35.8 percent), black females (25.0 percent), and white females (21.1 percent). These rates were slightly higher than those reported by the Bureau of Labor Statistics (1987b) for 1984. Older black males were slightly less likely to be employed than were white males. This difference among males by race was not statistically significant. On the other hand, older black females were significantly more likely to be employed than were older white females.

The Employed: Differences by Race

Of those who were employed, blacks were apt to work significantly fewer hours than whites. Data show that 23.3 percent of black males and 55.7 percent of black females worked part time, that is, less than 40 hours a week. Among whites, those percentages were 21.8 percent for males and 46.5 percent for females. Black females worked an average of 30.4 hours (s.d. = 12.65) in comparison to an average of 35.1 hours (s.d. = 11.92) for white females. Black males also worked fewer hours (mean = 38.6, s.d. = 10.76) than white males (mean = 41.4, s.d. = 12.72).

With regard to the occupational distribution of employed older persons, there were considerable differences by race for both males and females (see Appendix Table A). A greater percentage of employed older whites than blacks were in executive, administrative, and professional positions, whereas blacks were more likely to be employed in service occupations and semiskilled and unskilled labor positions. This is not surprising, given the historical trends of race and gender differences

in occupational distribution. Similarly, in regard to industry of employment (Appendix Table B) the distribution by race reflected previously documented differences between blacks and whites (Bureau of Labor Statistics, 1987b). Black males were most likely to be in manufacturing, professional services, and utilities and transportation, while white males were more evenly distributed across manufacturing, professional services, agriculture, and wholesale and retail trade. Personal and professional services were the greatest source of employment for black females, while white females were most apt to be employed in professional services, wholesale and retail trade, and manufacturing.

Racial differences in economic and sociodemographic background characteristics and health status that were evident in the older population as a whole were also reflected among those who were employed. Employed whites had significantly higher mean family incomes ($18,853) than employed blacks ($14,062); their educational levels were higher (a mean of 12.3 years for whites and 9.6 for blacks); and whites were more likely to be married and living with their spouse. There were no significant racial differences in the mean age of the employed (61.8 years for whites, 61.9 for blacks). More than two-thirds of employed respondents--69.8 percent of whites and 70.3 percent of blacks--were under age 65.

The Nonemployed

As would be expected, most nonemployed respondents viewed themselves as out of the labor force. Approximately 95 percent of nonworking males and 75 percent of females perceived themselves as being

completely or partly retired, with no significant differences by race. Nonetheless, a small number of persons among the nonemployed considered themselves "unemployed": 3.4 percent of black males and 1.5 percent of black females, in contrast to 1.4 percent of white males and .8 percent of white females.

Of those who considered themselves retired, blacks were significantly more likely than whites to have retired for health reasons: 46.1 percent of black males and 39.9 percent of black females had retired for reasons of health, whereas only 32.7 percent of nonemployed white males and 17.1 percent of white females has done so. Even when these responses were examined by age, as shown in Table 1, significant racial differences remained among females, and only among males aged 55-59 were there no significant race differences.

Further, as expected, there were significant racial differences among nonemployed persons in terms of family income (a mean of $8,428 for blacks and $14,307 for whites) and years of education (mean of 8.14 years for blacks and 10.9 for whites). The racial differences in marital status and region of the country which were noted for the sample as a whole were reflected, for the most part, among the nonemployed. In contrast to findings for the employed, however, the majority of nonemployed older persons were 65 or older--73.9 percent of whites and 72.8 percent of blacks.

Health and Employment

A fairly strong association emerged relative to health and employment status among both blacks and whites. The healthier individuals tended to be employed, having fewer functional limitations

Table 1

Retired Because of Health
(Percentage of those retired; numbers in parentheses)

	Black		White	
Age	Male	Female	Male	Female
55-59	16.9 (14)	12.8 (12)	9.0 (85)	7.2 (83)
60-64	27.5 (22)	18.3 (19)	16.7 (166)	10.2 (111)
65-69	34.7 (43)	32.9 (55)	23.7 (383)	13.5 (265)
70-74	30.4 (28)	32.5 (54)	23.8 (281)	12.9 (210)

than those who were not employed. As shown in Table 2, the percentage of employed persons decreased considerably as functional limitations increased among both races and both sexes. Nonetheless, employed blacks were generally in poorer health than employed whites. The average number of functional limitations among employed black males was .887 (s.d. = 1.826), and 72.3 percent had none. The mean for employed black females was 1.293 (s.d. = 1.906), and only 53.4 percent stated that they had no functional limitations. On the other hand, among employed white males the mean was .551 (s.d. = 1.345), and 77.5 percent had no functional limitations; for employed white females the average was .846 (s.d. = 1.603) and 67.5 percent had no functional limitations. Among employed blacks (males and females), approximately 12 percent worked with four or more functional limitations, while only 7 percent of employed whites did so.

Nonemployed older persons tended to be in poorer health than those who were working, and blacks again had significantly more functional limitations than whites. Among nonemployed black males, 39.8 percent reported no functional limitations; the mean was 2.470 (s.d. = 2.715). Black females who were not working averaged 3.274 functional limitations (s.d. = 2.925), and only 27.4 percent had none. Among whites, nonworking males had a mean of 1.839 (s.d. = 2.474) limitations and nearly half (49.4 percent) had none, while among white females, the mean was 2.043 (s.d. = 2.573); 44.2 percent had none.

Employment and Economic Status

Like previous studies, the results here showed that employment status is related to economic status among both blacks and whites:

Table 2

Functional Limitations among the Employed
(Percentages; numbers in parentheses)

Number of Functional Limitations	Black		White	
	Males	Females	Males	Females
None	50.0 (94)	39.9 (71)	51.5 (1460)	28.9 (815)
1-3	25.6 (21)	30.1 (46)	29.9 (323)	17.3 (286)
4+	15.6 (15)	8.3 (16)	13.5 (101)	8.4 (106)

Table 3 shows that rates of employment were higher among those of the highest family incomes and lowest among those of the lowest. Differences occurred, however, according to gender and race. At every level of family income, black females had higher percentages of employment than did white females. Among males, the racial differences were neither consistent nor significant across levels of family income.

Racial differences in employment according to economic status were also reflected in the percentage of employed workers according to the NHIS Poverty Index (Table 3). Blacks above the poverty level (both males and females) had higher percentages of employed persons than did whites, but of those below the poverty level, only among females were blacks more apt to be employed than whites. Employed persons were more likely to have family incomes above the poverty level (80.5 percent of blacks and 96.1 percent of whites) than were the nonemployed (54.9 percent of blacks and 88.4 percent of whites). Further, when employment status was linked to median family income, data revealed that among nonemployed blacks aged 55-64, the median family income was $7,000 in comparison to a median family income of $17,000 for employed blacks. And among whites, median family income was higher for employed persons ($21,000) than for those who were not employed ($18,000). That the employed have higher family incomes suggests that earned income from employment contributes to higher family income.

As would be anticipated, the employed were less likely to be receiving retirement income than were the nonemployed. The great majority of nonemployed males (91.5 percent of whites, 85.7 percent of blacks) received some form of retirement income, in contrast to about one-third of employed males (33.4 percent of whites, 30.8 percent of

Table 3

Percentage Employed, by Selected Economic and Sociodemographic Characteristics (Numbers in parentheses)

	Black		White	
	Males	Females	Males	Females
Family Income				
Under $5,000	8.8 (5)	14.9 (21)	20.9 (32)	9.2 (41)
5,000-6,999	14.3 (6)	19.7 (13)	14.1 (22)	11.3 (41)
7,000-9,999	30.2 (13)	21.4 (15)	16.0 (64)	13.9 (93)
10,000-14,999	30.1 (22)	27.8 (20)	22.6 (161)	19.3 (172)
15,000-19,999	56.3 (18)	37.5 (12)	29.3 (177)	23.9 (173)
20,000-24,999	55.6 (10)	47.4 (9)	41.6 (214)	25.2 (134)
25,000-34,999	78.1 (25)	66.7 (12)	51.4 (371)	28.3 (172)
35,000-49,999	83.3 (10)	47.1 (8)	71.9 (355)	34.8 (144)
50,000 +	60.0 (3)	57.1 (4)	80.1 (233)	34.1 (87)
Poverty Index (Family Income)				
Not poor	46.2 (102)	31.7 (80)	41.7 (1581)	23.1 (1000)
Poor	10.8 (10)	17.9 (34)	18.5 (48)	10.0 (57)

-Table continued-

Table 3 (continued)

	Black		White	
	Males	Females	Males	Females
Age				
55-59	65.9 (54)	54.8 (51)	79.3 (745)	44.7 (514)
60-64	50.0 (40)	40.4 (42)	59.2 (585)	30.4 (328)
65-69	21.5 (26)	18.8 (31)	23.7 (381)	13.6 (265)
70-74	14.8 (13)	5.5 (9)	16.1 (185)	6.8 (107)
Education				
None	5.6 (1)	13.3 (2)	31.8 (7)	12.0 (3)
1-8 years	30.4 (56)	14.7 (37)	28.6 (304)	10.4 (121)
9-11 years	45.2 (33)	35.3 (36)	36.5 (292)	15.8 (161)
12 years	50.9 (28)	32.7 (33)	41.6 (626)	24.0 (568)
1-3 years college	45.0 (9)	44.0 (11)	45.6 (252)	27.8 (184)
College graduate	37.5 (3)	40.0 (6)	53.7 (209)	27.0 (86)
Post-college	25.0 (7)	62.5 (5)	59.8 (189)	45.6 (83)

-Table continued-

Table 3 (continued)

	Black		White	
	Males	Females	Males	Females
Marital Status				
Married	39.7 (97)	29.5 (59)	42.2 1679)	19.9 (679)
Widowed	21.4 (9)	17.0 (36)	21.8 (62)	17.7 (301)
Divorced	31.3 (10)	33.3 (15)	36.2 (63)	38.2 (126)
Separated	41.9 (13)	22.0 (9)	36.8 (14)	40.0 (24)
Never married	22.2 (4)	48.3 (14)	36.2 (72)	31.9 (79)
Region of Residence				
Northeast	53.1 (34)	33.3 (29)	42.0 (487)	21.7 (313)
Northcentral	22.5 (18)	28.7 (25)	41.9 (518)	21.7 (328)
South	37.5 (72)	22.5 (71)	39.1 (564)	19.1 (344)
West	25.7 (9)	21.1 (8)	38.7 (327)	22.7 (229)

blacks). Approximately three-quarters of the nonemployed women received retirement benefits, while slightly more than one-third of the employed females did so.

Employment and Sociodemographic Background

As shown in Table 3, employment varied with sociodemographic background characteristics. As age increases, the less likely are bother blacks and whites to be employed. This is not unexpected, as one's ability to work decreases with increasing age. Further, there are cultural values and expectations associated with aging and retirement from the work force. In particular, age 65 still remains the anticipated threshold for retirement.

Employment status was also related to level of educational attainment for both blacks and whites. As level of education increased, the more likely older persons, both black and white, were to be employed. However, there were no significant overall racial differences among males, even though at various educational levels employment among blacks exceeded that of whites and vice versa. Among females, employed blacks exceeded whites at levels above an eighth-grade education.

In terms of marital status, across both race and gender widows were the least likely to be employed. Among black males, the separated and married had the highest percentage of employment, while among white males the married were the most likely to be employed. Data for females show never-married black women most likely to be employed, but divorced and separated white women had the highest percentage of employment.

Region of residence showed no statistically significant association with employment status for whites. Approximately 20 percent of white

females and about 40 percent of white males were employed persons across the four regions. Among blacks, however, employment was highest in the Northeast, especially for black males, at 53.1 percent. Older black females living in the South and West were the least likely to be employed; black males in the Northcentral and Western regions had the lowest percentage of employment. Racial differences in employment status were least marked in the South, but more prevalent in the Northeast for both males and females.

HEALTH AND EMPLOYMENT: A CLOSER EXAMINATION BY AGE AND INCOME

Because the relationship between employment and health appears to be affected by both age and income, it was decided to examine this relationship according to age as well as economic status. Table 4 presents findings for health status and age, and Table 5 for health and economic status.

Higher percentages of black females than white females were employed despite various levels of functional limitations and regardless of age. On the other hand, only black males under 65 years of age were less likely to be employed than white males. The differences by race diminished considerably among persons 65 and older.

Using the NHIS Poverty Index as an economic indicator, the data in Table 5 show that when family incomes were above the poverty line, blacks were more likely to be employed than whites across varying levels of functional limitations; below the poverty line, however, black males were less likely to be working than white males. Black females were more apt to be working than white females. Overall, for those not in

Table 4

Age, Number of Functional Limitations, and Percentage Employed
(Numbers in parentheses)

Number of Functional Limitations	Under 65 Years		65 Years and Over	
	Black	White	Black	White
None				
Males	76.6 (72)	79.0 (1066)	23.4 (22)	26.1 (394)
Females	62.4 (53)	45.0 (570)	19.4 (18)	15.7 (245)
1-3				
Males	42.9 (12)	61.5 (192)	16.8 (9)	17.0 (131)
Females	55.6 (30)	33.9 (187)	16.2 (16)	9.0 (99)
4+				
Males	22.5 (8)	24.0 (63)	11.7 (7)	7.8 (38)
Females	22.2 (10)	19.7 (80)	4.4 (6)	3.0 (26)

Table 5

Poverty Status, Functional Limitations, and Percentage Employed
(Numbers in parentheses)

Number of Functional Limitations	Family Income above Poverty Line		Family Income below Poverty Line	
	Black	White	Black	White
None				
Males	57.1 (72)	52.0 (1212)	18.8 (6)	35.8 (34)
Females	48.0 (47)	30.6 (676)	33.3 (15)	19.1 (30)
1-3				
Males	40.9 (18)	30.9 (273)	8.3 (2)	12.9 (8)
Females	33.3 (333)	18.9 (238)	28.3 (17)	10.0 (17)
4+				
Males	22.0 (11)	15.5 (87)	5.6 (2)	5.9 (6)
Females	10.1 (8)	9.4 (81)	2.4 (2)	4.1 (10)

poverty, ill health reduced the likelihood of employment more for whites than for blacks. For persons in poverty, the percentage of those employed declined with increasing functional limitations at a greater rate for white males than the other three groups. Employment among black females with family incomes below poverty was least affected by declining health. Further, black males and white females with poverty-level family incomes had the lowest employment rates and also were not as likely to be affected by variations in health status as were white males.

Table 6 gives the distribution of functional limitations for older employed persons. With few exceptions, employed black males and females exceeded whites in having specific functional limitations. It is important to note that older persons irrespective of race were least likely to work if they could not reach out to shake hands or lift something as heavy as 10 pounds. The most frequently mentioned limitation among the employed was difficulty in stooping, crouching, or kneeling.

Table 7 shows the mean number of functional limitations according to specific industries of employment. For males, industries accommodating the greatest number of functional limitations included agriculture and personal services; the least number of functional limitations were found in professional services, wholesale and retail trade, and manufacturing; and there were few differences by race. The greatest number of functional limitations were evident among black females in finance, wholesale and retail trade, personal and professional services; for white females, in personal services, utilities and wholesale and retail trade. Again, manufacturing

Table 6

Distribution of Functional Limitations among Employed Older Workers
(Percentages; numbers in parentheses)

Experienced Difficulty In:	Black (133 males, 133 females)		White (1,896 males, 1,214 females)	
Walking a quarter of a mile				
Males	15.0	(20)	7.5	(142)
Females	16.5	(22)	7.3	(89)
Walking up 10 steps without resting				
Males	9.8	(13)	4.1	(78)
Females	17.3	(23)	8.2	(99)
Standing up or being on your feet for 2 hours				
Males	14.3	(19)	9.0	(171)
Females	16.5	(22)	11.2	(136)
Sitting for about 2 hours				
Males	8.3	(11)	4.1	(78)
Females	6.8	(9)	5.6	(68)
Stooping, crouching or kneeling				
Males	15.9	(20)	14.6	(227)
Females	29.3	(39)	19.3	(234)
Reaching up over your head				
Males	5.3	(7)	5.3	(101)
Females	6.8	(9)	5.9	(72)
Reaching out as if to shake someone's hands				
Males	0.8	(1)	0.3	(6)
Females	-	-	0.7	(8)
Using your fingers to grasp a handle				
Males	3.0	(4)	2.5	(48)
Females	6.0	(8)	5.4	(65)
Lifting or carrying something as heavy as 25 pounds				
Males	12.8	(17)	5.7	(108)
Females	25.6	(34)	17.2	(209)
Lifting or carrying something as heavy as 10 pounds				
Males	1.5	(2)	1.5	(29)
Females	4.5	(6)	3.4	(41)

Table 7

Mean Number of Functional Limitations,
by Industry of Employment
(Standard deviations in parentheses)

	Males		Females	
	Black	White	Black	White
Agriculture, mining and construction	1.593 (2.707)	.677 (1.377)	--	.708 (1.515)
Manufacturing	.623 (1.773)	.482 (1.314)	.500 (1.069)	.654 (1.313
Utilities, transportation and recreation	1.000 (1.777)	.564 (1.364)	1.000 (.707)	.909 (1.625)
Wholesale and retail trade	0.600 (1.314)	.538 (1.276)	1.750 (2.050)	.853 (1.521)
Finance, business services	0.846 (1.345)	.759 (1.553)	1.889 (3.219)	.748 (1.650)
Personal services	1.429 (2.573)	1.048 (2.071)	1.453 (1.772)	1.398 (1.975)
Professional services, public administration	0.500 (1.336)	0.548 (1.323)	1.429 (2.363)	.745 (1.446)

industries were the least accommodating of functional limitations for females as well.

Preferences for Working among the Nonemployed

Because many of these older persons who had few or no limitations on their ability to work were not employed, preferences for working were examined by race and selected health, age, and income factors.

As shown in Table 8, there were noticeable differences between nonemployed persons who desired to work and those who did not. The latter had higher family incomes, were less likely to be in poverty, and were more likely to be 65 and older. Surprisingly, they tended to be in better health than those who desired employment, as evidenced by fewer functional limitations. This overall pattern was the same among blacks and whites, although whites had higher family incomes and were generally in better health than were comparable blacks, notwithstanding the desire to work. Among older persons who desired to work, the most frequently cited functional limitations were difficulties in standing for more than two hours or in stooping, crouching, and kneeling. Nonemployed blacks who desired to work expressed more difficulty than whites in walking a quarter of a mile and lifting or carrying 10 pounds (Appendix Table C).

Multivariate Analyses

To consider which factors are apt to be more important than others in predicting the employment of older persons, a series of multivariate analyses were performed using logistic regression. The logistic regression models were applied separately to two age groups: those above and below 65 years of age. An incremental approach was used to examine

Table 8

Willingness to Work and Selected Health, Age, and Income Characteristics among Nonemployed Older Persons

	Want to Work		Do Not Want to Work	
	Black	White	Black	White
	(41 males, 50 female)	(270 males, 450 females)	(44 males, 63 females)	(1,164 males, 1,831 females)
Mean functional limitations				
Males	1.83 (s.d.=2.70)	1.52 (s.d.=2.11)	.90 (s.d.=1.69)	0.76 (s.d.=1.42)
Females	2.38 (s.d.=2.83)	1.70 (s.d.=2.26)	1.58 (s.d.=2.16)	0.94 (s.d.=1.58)
Percentage above 65 years				
Males	58.5	67.8	81.7	82.9
Females	54.0	54.3	82.6	67.7
Median income				
Males	$7,000	$12,000	$8,500	$18,000
Females	$6,000	$13,000	$9,500	$18,000
Percentage below poverty				
Males	34.1	17.0	24.5	2.5
Females	42.0	13.3	28.6	5.1

each set of factors (economic, sociodemographic, and health) and their interactions with race before selecting a final model. The logistic regression analyses were conducted separately by gender because of sex differences in employment. For the economic indicator, it was necessary to use a measure of family income that excluded the individual's personal income. Given that the National Health Interview Survey did not include a measure of the individual's personal income, data from the 1984 Current Population Survey were used to estimate parameters which were applied to the NHIS sample.[1]

Table 9 presents the results of the logistic regression used to predict employment status for males. Neither race nor its interaction with health was significant. The only significant predictors were income, education, and age for both groups, and health for those under 65.

While health was an important predictor of employment for males under 65, it was not for those 65 or older. Other factors, particularly age, education, and family income net of individual income emerged as significant for males 65 years of age and older. The estimated odds ratios and confidence intervals for coefficients are given in Table 10.

The results of the logistic regression for females is given in Table 11. In contrast to the findings for males, race was significant in predicting employment status. In addition, as shown in Table 12, among females under 65, blacks were 3.48 times more likely to be employed as whites. Among those over 65, black females were 2.2 times more likely to be employed as similar white females.

Along with race, marital status was significant in predicting employment status for both age groups. The odds of being employed among

Table 9

Logistic Regression for Functional Health Status and Employment Status: Males

	Under 65 Years		65 Years and Older	
	Beta	se Beta	Beta	se Beta
Race				
Black	-.186	.192	.114	.205
Income	.094***	.015	.059***	.016
Age	-.217***	.019	-.094***	.017
Education	.056***	.015	.083***	.013
Marital status				
Married	.140	.239	-.310	.232
Previously married	.367	.264	-.297	.258
Health	-.028***	.007	.036	.021
Race x health	.014	.013	-.045	.030

***p=.001
**p=.01
*p=.05

Table 10

Odds Ratios and 95% Confidence Limit: Males

	Under 65 Years		65 Years and Over	
	Odds Ratio	Confidence Interval	Odds Ratio	Confidence Interval
Race				
Black	.830	.570-1.210	1.121	.750-1.675
Income	1.099	1.067-1.131	1.061	1.028-1.095
Age	.805	.776- .835	.910	.880- .941
Education	1.058	1.027-1.089	1.085	1.058-1.113
Marital status				
Married	1.150	.719-1.841	.733	.465-1.156
Previously married	1.443	.859-2.426	.743	.448-1.232
Health	.972	.959- .986	.965	.926-1.005
Race x health	1.014	.987-1.040	1.046	.987-1.119

Table 11

Logistic Regression for Functional Health Status and Employment Status: Females

	Under 65 Years		65 Years and Older	
	Beta	se Beta	Beta	se Beta
Race				
Black	1.248***	.213	.751**	.293
Income	.024***	.008	.010	.013
Age	-.128***	.016	-.155***	.020
Education	.121***	.016	.111***	.018
Marital status				
Married	-1.182***	.216	-.951***	.234
Previously married	-.345	.216	-.181	.219
Health	-.018	.010	-.109***	.027
Race x health	-.307***	.067	-.139	.083

***p=.001
**p=.01
*p=.05

Table 12

Odds Ratios and 95% Confidence Limit: Females

	Under 65 Years		65 Years and Over	
	Odds Ratio	Confidence Interval	Odds Ratio	Confidence Interval
Race				
Black	3.483	2.295-5.288	2.119	1.327-3.385
Income	1.024	1.008-1.040	1.010	.985-1.036
Age	.880	.853- .908	.856	.823- .891
Education	1.129	1.094-1.165	1.117	1.079-1.158
Marital status				
Married	.307	.201- .468	.386	.244- .611
Previously married	.708	.464-1.082	.834	.543-1.282
Health	.982	.963-1.002	.897	.851- .945
Race x health	.736	.645- .839	.870	.740-1.024

married females under 65 years were 39 percent of the odds of those who were not married. Above 65 years of age, the odds of married females being employed was 47 percent of the odds for nonmarried females.

Health was significant only for women 65 or older. For every increase in the number of functional limitations, the log odds of being employed decreased by .11 for females aged 65-74. Although health was not significant for the younger age group, the interaction of health and race was. Specifically, the interaction represented a racial difference of .74 in the odds ratio of being employed for females under 65 in relatively good health, as represented by only one functional limitation. At the same time, the difference by race in the odds ratio of being employed among females in poor health, as represented by four functional limitations, narrowed to .29. In other words, above 65 years the racial difference in the odds is less than among females 55-64 years of age.

Whereas level of family income minus individual income was a significant predictor of employment for males in both age groups, it was significant only for females under 65. However, age and education were significant across age groups for females when other factors were controlled, as was true for males.

SUMMARY AND CONCLUSION

The findings from these analyses of persons aged 55-74 indicate that when aggregated numbers are considered, there are no significant racial differences in employment among men, but black women are significantly more likely to be working than white women. Blacks work

fewer hours than whites and are slightly more likely to be unemployed than whites even among the older age groups.

The analyses also showed that employment status among older persons was related to various economic and sociodemographic factors. Employment was highest among those with the highest levels of family income and education; it was lowest among those in poverty and those who were widowed. Employed older persons were less likely to be receiving retirement income than were nonemployed persons. These patterns applied generally across race and gender, although there were differences. Again, black women consistently had higher employment rates than white women across various levels of economic status and sociodemographic background factors. The only exceptions occurred among divorced and separated women; those white women had higher rates of employment. Among men, differences by race were not consistent and were more complex. It was evident that the clustering of black males in the lower levels of family income and education affected overall rates of employment. Among poor men, blacks were less likely to be employed than whites. On the other hand, among those not poor, black men had higher rates of employment than white males.

Employment among older persons was also more likely to vary by region for blacks, but was consistent across region for whites. Further, employment among older persons was higher in particular occupations and industries, but these varied considerably by race and gender. These results suggest that there may be a need to target specific regions, industries, and perhaps occupations, in an effort to increase employment opportunities for older persons.

Of major concern in this analysis was the relationship of health to employment status in the older population. Healthier individuals on the whole were more apt to be employed and to work more hours than persons with poorer health. Older persons who were working were less apt than nonemployed persons to be limited in specific abilities such as shaking hands or lifting 10 pounds. Manufacturing industries were least likely to have in their work force those with functional limitations across race and gender, while personal services industries were those most likely to employ such persons.

When employment status was considered along with poverty level and health status, differences were evident by race and gender. Substantially fewer poor individuals were employed, notwithstanding their health status. However, it is not just health that inhibited their participation in the labor force, as evidenced by the considerable gap in employment rates among those in "poor" health and also income poor in contrast with those not poor. For example, more than 20 percent of black men and 15 percent of white men with four or more functional limitations and family incomes above the poverty level were employed, in contrast to less than 6 percent of those with family incomes below the poverty level. There are undoubtedly other factors which contribute to lower rates of employment among the poor, such as lack of skills, work experience, or employment opportunities. Again it is important to note the racial differences. Employment among black females was least likely to be affected by poor health, whether or not their family incomes were above or below the poverty level.

Overall, racial differences in health and employment were more marked among women, especially among those under 65 years of age. Black

women under 65 were more apt to be employed than white women, even though they were in poorer health. Over 65, racial differences in the relationship between health and employment diminished among women, although race continued to have an independent affect on employment status and number of hours for black women. The impact of race on employment status of black women is in large part reflected in employment histories of low-paying jobs, often part-time employment, intermingled with longer periods of unemployment. Such patterns of participation in the work force offer few chances to benefit from private pension plans, to make maximum payments to social security, or to accumulate substantial personal savings and investments for one's later years. As well as having poorer health than white women, black women are more likely to have the lowest family incomes, to lack the benefit of spousal income, and to live below the poverty level (National Caucus and Center for Black Aged, 1987). Consequently, it is not surprising that older black women would be more inclined to work, in an effort to enhance their economic status and well-being despite varying levels of functional limitations.

Although health influences ability to work among older persons, in some instances it is not as important as other factors such as age, education, and family income. For example, level of family income, that is, family income exclusive of the individual's contribution, was a significant predictor of employment for men (black and white) regardless of age and for women under 65 years of age. When other factors were controlled, health was significant only for women 65 and older and men under 65.

An examination of health status among the nonemployed indicated that there were substantial numbers with few functional limitations affecting their ability to work. However, the greatest desire for employment occurred among those with the greatest number of functional limitations. As expected, racial differences were related to a larger number of functional limitations among nonemployed blacks than whites, irrespective of the desire to work. Among nonemployed persons, blacks were more likely to report that they were not working for health reasons.

Among older persons not able to work because of health, ongoing efforts are needed to provide adequate health care and technological innovations which could extend their employability. Most important, it is necessary to meet the economic needs of older persons who are unable to work and whose family incomes are near or below the poverty level. Unfortunately, the extended life expectancy of the U.S. population as a whole will continue to be accompanied with greater economic costs related to medical care for the elderly with chronic illnesses.

For those not employed and able to work, it may be necessary to enlarge employment opportunities, especially part-time opportunities. Among older persons able to work but who do not desire to do so, employment incentives are needed to render work more economically rewarding, personally fulfilling, and not detrimental to health.

Appendix Table A

Occupational Distribution of Employed Older Workers, by Race and Gender

Occupation	Black				White			
	Males (n=146)		Females (n=151)		Males (n=2,013)		Females (n=1,375)	
	%	n	%	n	%	n	%	n
Executive, administrative	5.5	(8)	4.6	(7)	17.9	(361)	10.4	(143)
Professional	3.4	(5)	7.3	(11)	11.6	(233)	12.3	(169)
Technical	--		2.0	(3)	1.2	(25)	2.6	(36)
Sales	3.4	(5)	4.6	(7)	14.5	(292)	14.5	(199)
Administrative support	4.1	(6)	9.3	(14)	4.4	(88)	26.4	(363)
Private household	0.7	(1)	32.5	(49)	0.0	(1)	2.5	(34)
Protective services	2.1	(3)	2.0	(3)	2.7	(54)	0.4	(5)
Service	15.1	(22)	30.5	(46)	5.4	(109)	14.4	(198)
Farming	4.8	(7)	0.7	(1)	9.1	(183)	1.2	(17)
Production	24.0	(35)	--		17.4	(351)	2.4	(33)
Machine operation	10.3	(15)	4.0	(6)	5.8	(116)	7.4	(102)
Transportation	15.1	(22)	--		6.1	(122)	0.7	(9)
Handlers	10.3	(15)	0.7	(1)	2.4	(49)	1.3	(18)
Unknown	1.4	(2)	2.0	(3)	1.4	(29)	3.6	(49)

Appendix Table B

Distribution by Industry of Employed Older Workers, by Race and Gender

	Males				Females			
	Black (n=146)		White (n=1,788)		Black (n=149)		White (n=1,288)	
Industry	n	%	n	%	n	%	n	%
Agriculture, mining, and construction	29	(19.9)	325	(18.2)	1	(0.7)	47	(3.8)
Manufacturing	33	(22.6)	410	(22.9)	8	(5.3)	183	(14.9)
Utilities, transportation, recreation	20	(13.7)	163	(9.1)	5	(3.3)	52	(4.2)
Wholesale and retail trade	20	(13.7)	275	(15.4)	12	(7.9)	245	(20.0)
Finance, business services	13	(8.9)	229	(12.8)	9	(6.0)	130	(10.6)
Personal services	7	(4.8)	35	(2.0)	64	(42.4)	96	(7.8)
Professional services, public administration	22	(15.1)	331	(18.5)	49	(32.5)	436	(35.5)
Unknown	2	(1.4)	20	(1.1)	3	(2.0)	39	(3.2)

Appendix Table C

Percentage Distribution of Functional Limitations
of the Nonemployed Who Want to Work
(Number in parentheses)

	Black (41 males, 50 females)	White (270 males, 450 females)
Walking a quarter of a mile		
Males	56.1 (23)	21.1 (57)
Females	34.0 (17)	18.7 (84)
Walking up ten steps without resting		
Males	14.6 (6)	14.4 (39)
Females	32.0 (6)	18.2 (82)
Standing up or being on your feet for 2 hours		
Males	24.4 (10)	28.5 (77)
Females	36.0 (18)	24.7 (111)
Sitting for about 2 hours		
Males	22.0 (9)	11.1 (30)
Females	18.0 (9)	13.6 (61)
Stooping, crouching or kneeling		
Males	22.0 (9)	30.4 (82)
Females	36.0 (18)	30.4 (137)
Reaching up over your head		
Males	22.0 (9)	15.6 (42)
Females	22.0 (11)	11.8 (53)
Reaching out as if to shake someone's hand		
Males	7.3 (3)	1.5 (4)
Females	2.0 (1)	1.3 (6)
Using your fingers to grasp a handle		
Males	14.6 (6)	7.0 (19)
Females	10.0 (5)	8.7 (39)
Lifting or carrying something as heavy as 25 pounds		
Males	19.5 (8)	17.0 (46)
Females	40.0 (20)	34.4 (155)
Lifting or carrying something as heavy as 20 pounds		
Males	12.2 (5)	4.8 (13)
Females	8.0 (4)	8.4 (34)

NOTE

[1]With data from the 1984 Current Population Survey, multiple regression analyses were utilized to estimate parameters for the ratio of personal income to family income. Only data from persons 55-74 years of age were included. Excluded were persons who had never worked, and persons who were neither black nor white. This total sample size was 23,966. The predictor variables were age, gender, race, marital status (married or nonmarried), education, size of family, and region of the country. Dummy variables were created for gender (female or male), marital status (married, previously married, never married), race (black or white), region of the country (Northeast, South, Northcentral, and West) and number of family members. The resulting estimates were:

$$PI/FI = 1.070 - .334\ X_1 + .009\ X_2 - .0001\ X_3 + .007\ X_4 - .245\ X_5 + .129\ X_6 - .002\ X_7 + .002\ X_8 - .0001\ X_9 - .103\ X_{10}$$

where PI = CPS total personal income and FI = CPS total family income; X_1 = gender; X_2 = race; X_3 = age; X_4 = education; X_5 = married; X_6 = previously married; X_9 = south; X_{10} = number of family members

To arrive at a new estimate of family income net of personal income, the following was calculated using the SOA data and then placed in the logistic regression equation:

(1-PI/FI) *SOA total family income

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