

Black-White Differences in Disability Prevalence: The Importance of Marriage*

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ABSTRACT

Using 8,647 individuals aged 51-61 from the 1992 Health and Retirement Study (HRS), this study finds cross-sectional evidence that marriage is a powerful correlate of disability status for African Americans but not for whites, particularly in the case of serious disability. Furthermore, married blacks have roughly the same disability rate as married whites even though they have markedly lower socioeconomic status. Ordered logit regressions show that being unmarried raises disability rate by 29% for black men and 35% for black women. These findings suggest that the decline in marriage rates that occurred over this century in the United States may have been particularly detrimental to the health of African Americans. Inter-racial differences in marriage rates alone (holding other variables constant) can account for 19% of the racial gap in disability among men and 42% of the gap among women.

I. INTRODUCTION

A highly prominent agenda of the public health research community is to highlight, explain, and diminish social inequalities in health. A lamentable feature of much of this research is that it all too often ignores the role of marriage and family in understanding social disparities in health. Many health-related decisions—such as the purchase of medical insurance, place of residence, diet, patterns of exercise, allocation of economic resources, and the establishment of psychologically supportive relationships—are made in a family context and should be interpreted in light of that context. Spouses and partners, if they are present, are likely to play a very important role in how such decisions are made.

The lack of family context in studies of health inequalities is unfortunate because a large body of literature (which I discuss in the next section) suggests the importance of marital status as a predictor of health using a variety of health measures. In discussions of racial inequalities in health, the focus is often placed on variables such as education, occupation, income, and neighborhood effects, with less emphasis being placed on marriage and family. To be sure, a segment of the research community does not welcome research findings, such as those summarized in Waite and Gallagher (2000), that point to widespread and pervasive benefits of marriage. Timmreck (2002) recently noted that “for the past decade or so the field of public health and epidemiology has slowly and continually excluded and diminished the role of marital status and family status in overall implications on health status of individuals and society.” (p. 326) Certainly progress in narrowing social inequalities in health will be impeded unless we carefully examine all relevant institutions that potentially affect health, including marriage and family.

As a first step in integrating marriage into the analysis of racial inequalities, I explore in this paper the relationship between marriage and disability across different race/gender groups. At this stage of the investigation, I do not present a theory of how the health-marriage nexus should differ across groups other than to note the well-known empirical differences between blacks and whites in regards to marriage-related behaviors. For instance, blacks in the United States divorce at higher rates than whites and have children out of wedlock at higher rates than whites—though I take care to note that race may not be the *causal* variable in these relationships. A reasonable hypothesis, therefore, is that marriage will have less influence on health outcomes among blacks since they, as a group, have a weaker attachment to the institution of marriage than whites do.

The empirical evidence to follow argues strongly against such a hypothesis. For both men and women, the positive effects of marriage (in terms of avoiding disability) are much stronger for blacks than for whites. For instance, marriage is completely unrelated to disability among white women, but marriage has a strong positive impact (in terms of avoiding disability) for black women. For white men, I find a small (and statistically insignificant) effect of marriage on disability, but for black men, the effect is both large and significant. Even after controlling for wealth, education and health behaviors, being unmarried raises the probability of being disabled by 29% for black men and 35% for black women.

The social policy implications of these findings are potentially profound. Although most of the disability gap between whites and blacks is due to differences in socioeconomic status, marriage has a relatively powerful effect on disability prevalence for

blacks. In sum, it appears that declines in marriage rates have had long-reaching influences on the health and welfare of black Americans.

II. SOCIAL CORRELATES OF HEALTH

Understanding the social determinants of health is an area of study that crosses multiple academic disciplines. In one sense, research in this field has been highly productive because of the strong empirical regularities that have been uncovered. Health—whether measured by morbidity, disability, or mortality—is strongly correlated with (to name a few important variables) income, occupation, social class, education, and marital status. However, it is still very much an open question whether these variables play a causal role or are merely indicators of underlying and unobserved forces that are the true determinants of health. Furthermore, in many cases it is possible that the causality runs in the other direction (with, for instance, poor health resulting in marital dissolution or job loss). While an exhaustive review of these empirical regularities is beyond the scope of this piece, a brief review of the literature, with an emphasis on the role of marriage, is expedient to lay the groundwork for the statistical analysis that follows.

Race and Socioeconomic Status

Life expectancy at birth for African Americans is about 7 years shorter than for Caucasians (Rogers, Hummer, and Nam 2000). Naturally, the first place to look in explaining this large gap is differences in socioeconomic and demographic variables. Most studies show an important role for social and economic factors in explaining racial

differences in life expectancy, but considerable disagreement exists concerning the magnitude of the effects. Some (National Research Council, 1989; Rogers 1992; Rogers et al. 2000) argue that socioeconomic conditions are the most important reason for the racial gap. Rogers (1992) even goes so far as to say that “the racial gap in overall mortality could close completely with increased standards of living and improved lifestyles.” Other studies find persistent racial gaps even after controlling for socioeconomic status (Elo and Preston 1996; Nam 1995). For recent reviews of race, ethnicity, nativity and mortality, see National Research Council (1997) and Rogers, Hummer and Nam (2000)

Analyses of overall mortality, however, mask important race-related differences in mortality at different ages. Most important is the convergence in mortality risk at older ages. Many studies find a “cross-over” in mortality after age 65, with black mortality rates falling below the rate for whites, though there still exists considerable controversy on this issue (Elo and Preston 1997; Manton and Stallard 1997), and the cross-over may be primarily attributed to underestimating the age of blacks on death certificates (Preston, Elo, Rosenwaike, and Hill 1996).

Virtually all studies find significant differences in health and disability between blacks and whites. The disputed questions concern whether the differences are more or less completely explained by socioeconomic status (SES) and demographic variables (Satariano 1986; House, Kessler, Herzog, Mero, Kinney, and Breslow 1990; Mutchler and Burr 1991) or whether significant racial effects persist after controlling for other variables (Dowd and Bengston 1978; Ferraro 1987; Smith and Kington 1997). As with mortality, differences across the life-cycle are potentially important. Crimmins, Hayward and Saito

(1996), for instance, find no significant race differences in total life expectancy for race-education groups of the older population, but blacks have lower expected active life than non-blacks because of worse physical functioning at older ages.

The focus on SES as a determinant of racial gaps in health and mortality is justified by the wide array of studies that demonstrate a clear linkage between health and a variety of socioeconomic measures, including income, wealth, education, occupation, and social class (House et al. 1990; Crimmins et al. 1996; Hayward, Penta, and Mclaughlin 1997; Hemingway, Nicholson, Stafford, Roberts, and Marmot 1997; Rahkonen and Takala 1998; Liao, McGee, Kaufman, Cao, and Cooper 1999; Crimmins and Saito 2001). Furthermore, evidence is mounting that the socioeconomic differences in health have been widening over recent decades (Feldman, Makuck, Kleinman, and Cornoni-Huntley 1989; Pappas 1993; Manton, Corder, and Stallard 1997a and 1997b; Preston and Elo 1995). Crimmins and Saito (2001) also show that this widening gap is true for both whites and blacks in the United States.

Marital Status

Although probably receiving less attention than race or socioeconomic status, the association between health and marital status has undergone considerable investigation in recent decades and has been reviewed elsewhere (Ross, Mirowsky, and Goldsteen 1990; Waite and Gallagher 2000; Rogers, Hummer and Nam 2000). This is particularly true for demographic analyses of mortality (Gove 1973; Hu and Goldman 1990; Burman and Margolin 1992; Trovato 1992; Rogers et al. 2000). In an early study, Ortmeyer (1974)

concludes that married persons have lower mortality for almost every major cause of death. Hu and Goldman (1990) perform extensive international comparisons to show that mortality is higher for married persons in every time period and every country included in the study. They also find that mortality risk is highest for divorced persons and that the excess mortality of unmarried persons, as of the date of their study, had been increasing over recent decades. Although the protective effect of marriage is found for both sexes, most studies have found much stronger effects for men (Zick and Smith 1991; Goldman, Korenman, and Weinstein 1995; Lillard and Waite 1995).

A variety of health measures other than mortality are also associated with marital status, including self-reported health status, acute or chronic morbidity and disability. Probably the most extensive recent analysis is in Pienta, Hayward and Jenkins (2000), who use the Health and Retirement Study to show that the married dominate the unmarried across all common health measures, and across both genders, all races, and all unmarried categories. Their results confirm the previous findings of numerous other studies concerning marital status and health (including disability) (Verbrugge 1979; Verbrugge, Gates and Ike 1991; Stewart, Greefield, Hays, Wells, Rogers, Berry et al. 1987; Macintyre 1992; Wyke and Ford 1992; Goldman et al., 1997; Murphy, Glaser and Grundy 1997; Waldron, Weiss and Hughes 1997).

However, little consensus exists concerning causal explanations for the association between health and marital status. The most prevalent explanations focus on characteristics of marriage that affect health. In addition to surveying the empirical findings on marital status and health, seminal papers by Cobb (1976) and Cassell (1976)

introduced the concept that marriage provides key "social support," which in various forms has dominated the sociological literature related to health and epidemiology (House, Umberson, and Landis 1988a, 1988b; Litwick and Messeri 1989). A marriage provides a person with partners, family members and extended social networks that can assist the individual in maintaining good health.

A spouse can, in addition to providing emotional support, help his or her partner monitor health, encourage healthy behaviors and assist in obtaining medical care. In an analysis of cancer survival, Goodwin, Hunt, Key, and Samet (1987) find that unmarried persons not only have higher mortality (controlling for stage and type of treatment), but that they had later diagnoses and a lower likelihood of treatment, while Gordon and Rosenthal (1995) found that post-hospitalization health outcomes were better for married than unmarried, and Morgan (1980) shows a significantly higher rate of rate of hospitalization by the unmarried. Additionally, the unmarried are more likely to die from "social pathologies" (accidents, suicides and homicides) (Rogers 1995) and from diseases that are strongly influenced by a person's behavior (Umberson 1987). Men, in particular, seem to moderate their behaviors upon marriage (while returning to the risky behaviors after marriage). Stolzenberg (in press) finds that men's health deteriorates if they have wives who work more than 40 hours per week, but finds no reciprocal effect of a husband's employment on the wife's health. This suggests that wives play an important role in maintaining the health of their husbands, since a demanding work schedule likely reduces the time and energy that wives can devote to spousal health maintenance. Others have shown that married men drink less alcohol, are "more likely to smoke, to drink and

drive, to drive too fast, to get into fights, and to take other risks that increase the chances of accidents and injuries” (Waite and Ghallager 2000). Some evidence also suggests that sharing a residence with someone else does not confer the same advantages on people as does living with a spouse (Kobrin and Hendershot 1977; Lillard and Waite 1995).

For those who exit marriage, health is thought to deteriorate because of the loss of social support discussed above. Furthermore, marital dissolution can have strong direct effects on health. The literature on bereavement after the death of a spouse finds a sharp increase in mortality risk, particularly for men, immediately following the death of a spouse, (Bowling 1987; Kaprio, Koskenvuo, and Rita 1987), though some have found the risk to diminish after a short period of time (Martikainen and Valkonen 1996).

Martikainen and Valkonen (1998) also find that the bereavement effects are similar across education and income groups. Although not much is known about the physical processes that raise mortality risk, Kiecolt-Gleiser et al. (1987) find that women whose marriages had recently ended had poorer immune system functioning than married women.

Much has been made of the differences between men and women in the association between health and marital status. As noted above, several studies have found a greater impact of marital dissolution on men, though women who are widowed, divorced or separated also face a higher risks of mortality, morbidity and disability. Lillard and Waite (1995) conclude that men gain from marriage by a change to a more “settled” life-style, whereas women gain predominantly through access to increased financial resources. They find that upon marriage, men experience an immediate reduction in the hazard of mortality and that the hazard rate returns to its pre-marriage level following marital dissolution.

Women, on the other hand, experience a steady decline in the hazard with each year of marriage.

Some have questioned a direct causal role for marriage and argue, instead, that selection into and out of marriage is responsible for the association between health and marital status. Some evidence shows that selection is important, particularly in marriage formation, where those with better health habits (Fu and Goldman 1996) and higher health status (Waldron, Hughes and Brooks 1996) are more likely to marry, though the selection hypothesis usually finds considerably less support than the protection hypothesis (Korbin and Hendershot 1977; Morgan 1980). Others have found no support for the selection hypothesis (Zick and Smith 1991).

Recent studies have searched for selection effects through both an analysis of unobservable variables and through direct controls for health at time of marriage. Behrman, Birdsall, and Deolankar (1995) use data on twins to estimate the effect of unobservable, individual human capital endowments on labor market success and success in the marriage market. These endowments are also strongly linked to obesity, which suggests a possibility of marital selection on the basis of health. Similarly, Lillard and Panis (1996) find positive selection on the basis of unmeasured factors that are correlated with both health and marriage, but they also find evidence of adverse selection, which results from an incentive to marry by those in poor health. In a recent historical-prospective study of American men, Murray (2000) found that healthier men do have higher marriage rates, but that they also face a higher hazard of mortality than unmarried men, even after controlling for their initial health.

Interactions

A central difficulty in identifying the social determinants of health is that most of the potential causal variables are highly correlated with one another. Race and SES are obvious examples, but both race and SES are also strongly correlated with marital status. Almost none of the published literature on the social correlates of health has disentangled the effects of the individual variables. The effect of race is particularly challenging because racial differences in health are almost surely a proxy for a complex set of unobserved social, cultural and economic factors. Some evidence shows, for instance, differences in race for some specific pathologies (such as the higher incidence of sickle-cell anemia among African Americans, and the higher incidence of hypertension among African American women), but in most cases it is not clear that these differentials are genetically derived, and many argue that common racial categories have no genetic basis (Krieger, Rowley, Herman, Avery, and Phillips 1993).

The most detailed analysis to date of the interaction of the various social determinants of health is by Pienta, Hayward and Jenkins (2000). They found strong marriage effects across races (whites, African-Americans and Latinos) and for both males and females, but they do not interact race with gender. In terms of explaining health differences across marital status categories, gender differences may be crucial, especially since African-Americans have markedly lower marriage rates than whites. The authors also did not control for education, income or other socioeconomic determinants of health. Another recent study (Waldron, Weiss, and Hughes 1997) that attempted to compare the

health of women in the U.S. across marital status categories reported that none of their reported differences vary by race, but the authors did not report the actual estimates.

The analysis that follows is based on the idea that since the accumulated evidence strongly supports the idea that marriage is beneficial to one's health, that racial differences in health may be derived, in part, from differences in marriage experiences (including marriage formation and dissolution rates, marital quality, and the cultural importance of marriage) across racial categories. Disability is a health indicator that is strongly affected by social context, and marital status may play an important role in determining differences in social context across racial groups.

III. METHODS

Data

All data used in this study are from the 1992 Health and Retirement Study. The target population of the sampling frame is all non-institutionalized adults in the contiguous United States born between 1931-1941 (aged 51-61 at the time of the survey). The observational unit is a household with at least one member in the target age range. Face-to-face interviews were conducted with all age-eligible target respondents and their spouse or partner. The sample is a multi-stage area probability sample which includes over-samples of blacks, Hispanics, and residents of Florida. HRS-supplied sampling weights that account for the multi-stage sampling process and over-sampling are used throughout this analysis. The complete 1992 HRS sample contains 7,608 households with an estimated survey response of 80.2%-82.1%.

The data for the current study are restricted to 8,647 age-eligible individuals. Subgroups used in the analysis consist of 3,347 white males, 704 black males, 3,604 white females, and 962 black females. Race is self-identified, and both white and black groups consist only of those who do not also identify themselves as Hispanic. Hispanics and other race/ethnic groups are not included in the present analysis in order to make the comparisons more tractable, because of small sample sizes, and because such a large percentage of Hispanics and other groups are immigrants.

Because data was obtained from face-to-face interviews, missing data for most variables are rare. The HRS uses standard imputation procedures to replace missing values. Missing values of non-economic variables, including education and health, were imputed using a stratified hot-deck procedure (Wallace and Herzog 1995). The imputation of economic values, including the household wealth variable discussed below, was based on participant responses to a series of bracket questions which were asked when a participant could or would not provide a precise number. These bracket questions greatly improve the ability to impute reasonable values for missing cases. As a result of the HRS imputation procedures, it was not necessary to drop any cases from the analysis due to missing data.

Variable Definitions

Disability, as defined by the World Health Organization (WHO), is “the inability to perform socially prescribed roles due to a medically defined condition, impairments, and functional imitations (1980).” Disability is the end result of a pathology that leads from

disease to functional limitations (difficulties in performing specific physical tasks such as walking a certain distance or lifting a particular amount of weight) to an inability to perform particular activities or roles, such as bathing, eating, working for pay or keeping house. In this conceptualization, disability is a product of both physical health and the social and economic context of the individual. In short, a disease or a functional limitation that is disabling for one person may not be disabling for another. One reason that marriage may influence disability is that it fundamentally affects the social and economic context of individuals.

The HRS contains numerous questions that can be used to construct a measure of disability. In this analysis, respondents are classified as disabled if they have “any impairment or health problem that limits the kind or amount of paid work [they] can do” or that “limit[s] the kind or amount of work [they] can do around the house.” Furthermore, respondents are disabled if they report any difficulty in performing one of the surveyed “activities of daily living” (ADLs), including getting in and out of bed without help; bathing or showering without help; eating without help; or getting dressed without help (though very few people with ADL disability fail to report a paid or house work disability as well). This conceptualization of disability follows very closely the standard conceptualizations of disability in the recent literature (Verbrugge and Jette 1994).

Because those with ADLs almost always report some limitation in work or home activity, the disability classification is broken down into two, mutually exclusive levels. The first level consists of those who report only work or home disability but report no ADLs. Level 2 disability consists of those who have ADLs. A very small percentage of

cases (less than 10%) report ADLs but do not report work or home disability; these cases are classified as level 2.

Marital status categories are self-reported in the HRS. Table 1 reveals the sharp differences that exist across race/gender groups in marital status. Only 61.5% of black men and 39.5% of black women in the sample were married and living with their spouses in 1992. The differences between men and women occur because men tend to be older than the women they marry (which means that many of the wives of younger men in their early 50s and many of the husbands of women in their later 50s) will not fall in the 51-61 age group and are, therefore, not eligible for individual-level analysis. Furthermore, mortality is higher among men than women for both races. This results in 18.5% of black women falling in the widowed category, as opposed to only 4.6% of black men. Widowhood is also much more common among white women than white men.

Exploratory analysis (not reported here) reveals that differences in disability across the marital status categories reported in Table 1 cannot be estimated with a reasonable degree of precision. Therefore, in the analysis that follows marital status is treated as a dichotomous (married/unmarried) variable in all the estimates (those who are “separated” are treated as unmarried, so the “married” category should be interpreted as “married and living together”).

Other variables in the analysis include age, years of schooling, log of wealth, smoking status, and body mass index (BMI). Age is measured in years at the time of the interview. Years of schooling are years completed and do not imply that a degree was attained. Wealth is measured as total *net* wealth for the household. To standardize wealth

across marital status categories, the total amount is divided by 2 for married and cohabiting individuals. Additionally, the regression analysis follows the standard approach of taking the natural log of wealth, which makes variation in wealth at the bottom of the distribution much more important than variation at high levels of wealth. Finally, smoking and BMI are included to proxy for health behaviors, with smoking indicated by a dummy variable if the individual is a current smoker, and BMI is calculated with the standard formula of weight (in kilograms) divided by the square of height (in meters).

Table 2 shows the sample characteristics for the above variables broken out by race, gender, and marital status. Differences in age are negligible because of the sample design. For men, BMI is virtually identical for blacks and whites (interestingly, single men are slightly thinner for both groups). For women, blacks are significantly heavier, but marital status differences are not present. Black men smoke more than white men, whereas black and white women have very similar smoking rates. For all groups, the married smoke less than the unmarried by about 10 percentage points.

Race differentials in SES are also prominent for both men and women. In general blacks have about twice as many individuals without a 12th grade education. White men are much more likely than black men to have 16 or more years of school (26.0% compared to 9.4%), but white women have only a slightly higher proportion receiving 16 or more years than blacks (15.2% compared to 12.0%). Educational differences across marital status categories are very small for both black and white men, and married women of both races are somewhat better educated than their unmarried counterparts.

Unsurprisingly, whites have much higher wealth levels (which is net wealth in all cases) than blacks. Table 2 reports the average values of log wealth because log wealth is used in the regression analysis. Another revealing way to compare the groups is with median wealth. For married individuals the median's wealth values are \$77,000 for white men, \$83,000 for white women, \$32,250 for black men, and \$30,000 for black women (note that women in this sample have husbands a few years older on average than the men in the sample, which accounts for the higher levels of household wealth for white women). For unmarried individuals, the racial gap in median wealth is much more stark: \$59,500 for white men, \$55,000 for white women, \$4,500 for black men, and \$6,200 for black women. In sum, for both whites and blacks, married persons have much higher wealth than the unmarried, but significant racial differences exist for both the married and the unmarried, with white median wealth levels roughly ten times the black levels for unmarried persons.

Analytical Method

The hypothesis of this paper is that the effects of marriage on disability may differ along racial and gender lines. To this end, a method is needed that imposes minimal restrictions on the effects of marriage across race/gender groups. This flexibility is obtained most effectively by stratifying the sample according to race and gender. This approach mitigates the confounding effects of group-level heterogeneity because the unobserved determinants of disability across groups are allowed to vary across race/gender groups through the assumptions of different intercepts and different error distributions. This stratification method turns out to be very important for the results that follow.

Because there are three categorical values for the dependent variable, it is necessary to estimate a simple generalization of logistic regression introduced by McKelvey and Zavoina (1975) as ordered logit regression and McCullagh (1980) as the proportional odds model. The ordered logit framework is motivated by a simple latent variable model as follows.

Assume that there is a latent measure of true disability status, D^* , that is a function of a vector of Covariates X . We can then write the latent variable model as:

$$D^* = X\beta + e_i$$

Where e_i is a random, independent error term, and β is a vector of regression coefficients.

We observe only three levels of disability:

$$\begin{aligned} \text{No disability:} & \quad D = 0 \text{ if } \tau_0 \leq D^* \leq \tau_1 \\ \text{Level 1 disability:} & \quad D = 1 \text{ if } \tau_1 \leq D^* \leq \tau_2 \\ \text{Level 2 disability:} & \quad D = 2 \text{ if } \tau_2 \leq D^* \leq \tau_3, \end{aligned}$$

where $\tau_0 = -\infty$ and $\tau_3 = +\infty$. The other parameters in the model, β , τ_1 , and τ_2 , are estimated by

maximum likelihood. Because we are estimating race/gender groups separately, as noted above, the τ “threshold” parameters are allowed to vary across groups. Predicted values are the probabilities of observing $D = m$, ($m = 0, 1, 2$) and the probabilities are calculated as

$$Pr(D = m | X) = F(\tau_{m+1} - X\beta) - F(\tau_m - X\beta),$$

where F is the cumulative distribution function for e_i .

All estimation, including calculation of means and confidence intervals, is performed with the STATA 7 statistical software. As noted above, all estimates

incorporate the HRS-supplied sampling weights that are appropriate for individual-level analysis. Unless otherwise indicated, all tests of statistical significance will be performed at the 5% level. Each regression is performed with maximum likelihood estimation, and all standard errors and confidence intervals are calculated using robust (heteroskedasticity-consistent) standard errors.

Cross-sectional v. Longitudinal Analysis

The most important limitation of this study arises from the cross-sectional nature of the data employed. As is always the case with cross-sectional data, causality is difficult to infer. Reverse-causality is potentially important because disability is known to affect SES and may also influence marital transitions. However, the choice of covariates has been undertaken to minimize this reverse-causality. For instance, wealth, which proxies for SES across the life course, is used instead of current income, which is much more variable and may be significantly reduced following the onset of disability. Furthermore, the respondents in this study are all several decades past the age most people complete their education. While a long-standing disability may have affected years of schooling earlier in life, the great majority of the cases used here became disabled after their education level was determined.

Longitudinal analysis, on the other hand, offers the potential of tracking causal relationships between marital status and changes in health. To do this appropriately, however, requires lengthy periods of data collection over the life course of respondents, frequent points of observation, and consistency of survey questions across time. No

existing longitudinal data set is free of serious weaknesses in regards to these important characteristics. Furthermore, choosing a statistical specification that accurately captures the unknown dynamics is a challenging research task. In short, longitudinal analysis is not without its pitfalls.

To get a comprehensive picture of the relationship between marital and health processes, research should analyze both cross-sectional and longitudinal relationships. A cross-sectional analysis, while not revealing much about causality, does show the net effects of long-term interaction between marriage and health. Furthermore, the cross-sectional analysis may capture long-standing relationships between marriage and disability that might be masked by a longitudinal analysis designed to reveal short-term changes in health. Because the interaction of race, marriage and disability has not been seriously studied in the past, the cross-sectional estimates provided here will help frame the research questions for subsequent longitudinal analysis.

Other Limitations

A few other limitations deserve attention. The first is the absence of additional racial and ethnic groups in the analysis. Extrapolating the estimates for African Americans to other racial or ethnic minorities is not appropriate because these groups differ in notable ways—not the least of which is different rates of marriage and attitudes towards marriage. Furthermore, many racial groups in this age cohort, such as Hispanics, have much higher percentage of immigrants. Foreign nativity and migration may have important effects on

both marital transitions and patterns of disability prevalence. Extending the analysis here to other race and ethnic groups is an important topic for future research.

Finally, the results presented here are valid only for one health measure, disability, and one age group, 51-61. The relatively narrow age interval of the data is an advantage in that potential cohort differences in the effects of various covariates are not a serious issue. However, it is not necessarily true that the implications of these estimates are valid for other age groups or other health outcomes, such as chronic illness or mortality. In the case of mortality, for instance, several studies cited previously have found that race differentials depend critically on age and may even be reversed at older ages.

IV. RESULTS

Descriptive Statistics

Using the definition discussed above, the point prevalence of disability for the entire sample (blacks and whites combined) is 25.3% (all prevalence proportions will be presented in percentage terms), though most of these cases are only level 1 disability. Differences in disability prevalence by race and sex are given in Table 3. Three immediate and striking results are evident. The first is the statistically significant difference in disability prevalence between blacks and whites. The prevalence for black men is 31.8% compared to 23.2% for white men. This is a black-white odds ratio of 1.37. Similarly, disability prevalence is 33.2% for black women and only 25.6% for white women, an odds ratio of 1.30.

The second and much more surprising result is that racial differences in disability status are closely linked to marital status, particularly for women. For married men, the black-white difference narrows considerably (OR=1.18) and is not statistically significant. For unmarried men, on the other hand, the racial gap widens. Disability prevalence for unmarried black men is 40.5%, compared to only 27.8% (OR=1.46) for white men, and is statistically significant. For women this pattern is more pronounced. Married black women actually have a slightly *lower* prevalence (23.4%) than do married white women (24.5%) (OR=.95). For unmarried women, in contrast, 39.9% of blacks are disabled, compared to 28.3% of whites (OR=1.41).

The third feature of the descriptive statistics is that level 2 disability is much more common among blacks than whites and that the married-unmarried differential in level 2 disability is much higher for blacks than for whites for both men and women. Unmarried black men have a 150% higher (.195/.078) rate of level 2 disability than married black men, while married black women have a 63% higher (.196/.120) rate than black women who are married. Comparable percentages for white men and women are, respectively 30% (.094/.072) and 54% (.103/.067).

Ordered Logit Results

Ordered logit regression is used to test whether marital status remains a significant predictor of disability even after controlling for the effects of SES and health-related behaviors. Table 4 gives regression results for each of the four race/gender groups

discussed previously. Coefficient estimates, along with standard errors and t-stats, are presented, along with measures of statistical significance.

As expected, schooling and log wealth have large and significant effects on the likelihood of being disabled for all groups. Interestingly, the effects of education differ significantly across the race/gender groups (since the unstandardized coefficients cannot be directly compared across the models, it is necessary to calculate marginal effects on the probability of disability based on the regression coefficients; this analysis has been done and confirms the pattern implied by the coefficients). Thus education appears to have a particularly strong effect on the disability status of black women. Log wealth also has a strong and highly significant effect on the probability of being disabled, but the coefficients do not differ significantly between the gender/race groups.

Health habits have more modest effects than the SES variables. Smoking tends to raise the probability of disability, except for black women, where it lowers it slightly, but in none of the groups is the effect of smoking significant. BMI, on the other hand, is a significant predictor of disability, with a roughly equal effect for each group.

The effect of marriage on disability differs sharply across the race/gender groups. Most notable is the large effects for both black men and black women. In contrast, white men have a much more modest benefit from marriage and white women have no benefit (the coefficient on the “Single” variable is actually negative for white women). These statistically significant estimates reveal that the sample stratification employed here is warranted. Indeed, imposing an equality of coefficients, which would be an implicit assumption of pooling the race/gender groups into a single regression, would be invalid.

In order to isolate the effects of marriage for each race/gender effect, the regression models of Table 4 were used to predict disability levels by race and gender. These results, shown in Table 5, hold all other covariates constant at their mean levels and isolate the effect of marriage within each race/gender group. These estimates show that the importance of marriage implied by the simple descriptive statistics of Table 2 hold up when controlling for other important covariates. Being unmarried raises the probability of disability for black men by 29% (from .279 to .360) and for black women by 35% (from .257 to .348). In comparison, being unmarried raises disability among white men by 16% and actually lowers disability by 4% among white women (both statistically insignificant effects). Finally, as indicated by the descriptive statistics, the effects of marriage for blacks are most pronounced in the case of level 2 disability, indicating that marriage among African Americans not only protects against disability in general but also sharply lowers the likelihood of more serious disability.

Explaining the Racial Gap

Within the model estimated above, black-white differentials are explained primarily by differences in socioeconomic variables. Nonetheless, differential marriage rates play an important role as well. One way to show this is to use the regression models to predict disability rates assuming that blacks were married at the same rates as whites. If this were to happen, the overall disability rate would fall to .293 for black men and .283 for black women. This implies that 19% of the gap for men and 42% of the gap for women is explained by marriage, even though socioeconomic variables for all groups are held

constant. Because higher marriage rates would likely result in higher levels of socioeconomic status, the above estimates probably understate the role that marriage has in explaining the racial gap in disability prevalence.

V. CONCLUSIONS

Given the history that African Americans have experienced—pervasive discrimination, a lack of educational and employment opportunities, and the frequent unavailability of high-quality health care—it is hardly surprising that African Americans are approaching the latter part of their lives with significantly higher levels of disability than do American whites. What is lacking from this story—and from the scholarly literature on racial inequalities in health—is an appropriate amount of emphasis on the role of social institutions such as marriage.

The evidence accumulated here shows that marriage is particularly important for African Americans. This is important not only because the marriage rates for middle-aged blacks are so low, but also because the marginal effects of marriage (holding other variables constant) are very strong for blacks. Even though married blacks have markedly lower levels of education and wealth than do married whites, their levels of disability are very similar. Indeed, married black women actually have a slightly lower level of disability than married white women. Thus, marriage appears to insulate blacks from the negative health consequences of reduced economic opportunities. Unmarried blacks face a vastly different picture and the large gaps between single blacks and single whites starkly reveal these consequences, especially when looking at severe disability.

As noted earlier, the cross-sectional analysis employed here cannot be used to conclude that marriage plays a *causal* role in reducing disability for either blacks or whites. Even more uncertain would be any claim that changes in social policy that promote marriage among African Americans would be an effective instrument for increasing racial equality in terms of health. However, the role that marriage plays among African-Americans in the cross-sectional analysis demands further exploration. As policy makers and the research community continue to address the important problem of social inequalities in health, it is imperative that they try to understand how marriage functions to promote health and how public policy might be crafted to exploit the beneficial effects associated with marriage.

References

- Behrman, J., Birdsall, N., and Deolalikar, A. (1995). Marriage markets, labor markets, and unobserved human capital: An empirical exploration for South-Central India. *Economic Development and Cultural Change*, 43, 586-601.
- Bowling, A. (1987). Mortality after bereavement: A review of the literature on survival periods and factors affecting survival. *Social Science and Medicine*, 24, 117-124.
- Cassell, J. (1976). The contribution of the social environment to host resistance. *American Journal of Epidemiology*, 104, 107-123.
- Cobb, S. (1976). Social support as a moderator of life stress. *Psychosomatic Medicine*, 38, 100-115.
- Crimmins, E., Hayward, M. D., and Saito, Y. (1996). Differentials in active life expectancy in the older population of the United States. *Journal of Gerontology: Social Sciences*, 51B: S111-S120.
- Crimmins, E., and Saito, Y. (2001). "Trends in healthy life expectancy in the United States, 1970-1990: gender racial and educational differences. *Social Science and Medicine*, 52, 1629-1641.

- Dowd, J. J., and Bengston, V. L. (1978). Aging in minority populations: an examination of the double jeopardy hypothesis. *Journal of Gerontology*, 33, 427-436.
- Elo, I., and Preston, S. H. (1996). Educational differences in mortality: United States, 1979-85. *Social Science and Medicine*, 42, 47-57.
- Elo, I., and Preston, S. H. (1997). Racial and ethnic differences in mortality at older ages. Pp. 10-42 In L. Martin and B. Saldo (Eds.), *Racial and ethnic differences in the health of older Americans* (pp. 10-42). Washington, D.C.: National Academy Press.
- Feldman, J. J., Makuck, D. M., Kleinman, J. C., and Cornoni-Huntley, J. (1989). National trends in educational differentials in mortality. *American Journal of Epidemiology*, 129, 919-933.
- Ferraro, K. F. (1987). Double jeopardy to health for black older adults. *Journal of Gerontology*, 42, 528-533.
- Fu, H. and Goldman, N. (1996). Incorporating health into models of marriage choice: Demographic and sociological perspectives. *Journal of Marriage and the Family*, 58, 740-758.
- Goldman, N., Korenman, S., and Weinstein, R. (1995). Marital status and health among the elderly. *Social Science Medicine*, 40, 1717-1730.
- Gordon, H., and Rosenthal, G. (1995). Impact of marital status on outcomes in hospitalized patients. *Archival Internal Medicine*, 155, 2465-2471.
- Goodwin, J., Hunt, W., Key, C., and Samet, J. (1987). The effect of marital status on stage, treatment, and survival of cancer patients. *Journal of the American Medical Association*, 258 (21), 3125-3130.
- Gove, W. (1973). Sex, marital status, and mortality. *American Journal of Sociology*, 79, 45-67.
- Hayward, M. D., Pienta, A., McLaughlin, D. (1997). Inequality in men's mortality: The socioeconomic status gradient and geographic context. *Journal of Health and Social Behavior*, 38, 313-30.
- Hemingway, H., Nicholson, A., Stafford, M., Roberts, R., and Marmot, M. (1997). The impact of socioeconomic status on health functioning as assessed by the SF-36 Questionnaire: The Whitehall II study. *American Journal of Public Health*, 87, 1484-1490.
- House, J. S., Kessler, R.C., Herzog, A. R., Mero, R. P., Kinney, A. M., and Breslow, M. J. (1990). Age, socioeconomic status, and health. *The Milbank Quarterly*, 68 (3), 383-411.

- House, J. S., Umberson, D., Landis, K. R. (1988). Structures and processes of social support. *Annual Review of Sociology*, 14, 293-318.
- Hu, Y., and Goldman, N. (1990). Mortality differentials by marital status: An international comparison. *Demography*, 27 (2), 233-250.
- Kaprio, J., Koskenvuo, M., and Rita, H. (1987). Mortality after bereavement: A prospective study of 95,647 widowed persons. *American Journal of Public Health*, 77, 283-287.
- Keicolt-Glaser, J. K. (1987). Marital quality, marital disruption, and immune function. *Psychosomatic Medicine*, 49, 13-34.
- Korbin, F., and Hendershot, G. (1977). Do family ties reduce mortality? Evidence from the United States, 1966-1968. *Journal of Marriage and the Family*, 39, 737-745.
- Krieger, N., Rowley, D. L., Herman, A. A., Avery, B., and Phillips, M. T. (1993). Racism, sexism and social class: Implications for studies of health, disease and well-being. *American Journal of Preventive Medicine*, 9, 82-122.
- Liao, Y., McGee, D. L., Kaufman, J. S., Cao, G., and Cooper, R. S. (1999). Socioeconomic status and morbidity in the last years of life. *American Journal of Public Health*, 89, 569-572.
- Lillard, L., and Panis, C. (1996). Marital status and mortality: The role of health. *Demography*, 33 (3): 313-327.
- Lillard, L., and Waite, L. (1995). 'Til death do us part: Marital disruption and mortality. *American Journal of Sociology*, 100 (5), 1131-1156.
- Litwack, E., and Messeri, P. (1989). Organizational theory, social supports, and mortality rates: A theoretical convergence. *American Sociological Review*, 54, 49-66.
- Macintyre, S. (1992). The effect of family position and status on health. *Social Science and Medicine*, 35, 453-464.
- Manton, K. G., and Stallard, E. (1997). Health and disability differences among racial and ethnic groups. In L. Martin and B. Soldo (Eds.), *Racial and Ethnic Differences in the health of older Americans*. Washington, D.C.: National Academy Press.
- Manton, K., Corder, L. S., and Stallard, E. (1997a), Chronic disability trends in elderly United States populations. 1982-1994. *Proceedings of the National Academy of Sciences of the USA: Medical Sciences*, 94, 2593-2598.

- Manton, K., Stallard, E., and Corder, L. (1997b), Education-specific estimates of life expectancy and age-specific disability in the U.S. elderly population: 1982 to 1991. *Journal of Aging and Health*, 9, 419-450.
- Martikainen, P., and Valkonen, T. (1996). Mortality after death of spouse in relation to duration of bereavement in Finland. *Journal of Epidemiology and Community Health*, 50, 264-8.
- Martikainen, P. and Valkonen, T. (1998). Do education and income buffer the effects of death of spouse on mortality? *Epidemiology*, 9, 530-4.
- McCullagh, P. (1980). Regression models for ordinal data (with discussion). *Journal of the Royal Statistical Society*, 42, 109-142.
- McKelvey, R. D. and Zavonia, W. (1975). A statistical model for the analysis of ordinal level dependent variables. *Journal of Mathematical Sociology*, 4, 103-120.
- Morgan, M. (1980). Marital status, health, illness and service use. *Social Science and Medicine*, 14A, 633-643.
- Murphy, M., Glaser, K., and Grundy, E. (1997). Marital status and long-term illness in Great Britain. *Journal of Marriage and the Family*, 59, 156-164.
- Murray, J. E. (2000). Marital protection and marital selection: Evidence from a historical-prospective sample of American men. *Demography*, 37, 511-521.
- Mutchler, J. E., and Burr, J. A. (1991). Racial differences in health and care service utilization in later life: The effect of socioeconomic status. *Journal of Health and Social Behavior*, 32, 342-356.
- National Research Council (1989). A common destiny: Blacks and American society, edited by G. Jaynes and R. Williams. Washington, DC" National Academy Press.
- National Research Council. (1997). *Racial and ethnic differences in the health of older Americans*, edited by L. Martin and B. Soldo. National Academy Press: Washington, D.C.
- Ortmeyer, C. F. (1974). Variations in morality, morbidity and health care by marital status. in L. L. Erhard and J. E. Berlin (Eds.), *Mortality and morbidity in the United States* (pp. 159-184). Cambridge, Mass, Harvard University Press.
- Otten, M. W. Jr. et al. (1990). The effect of known risk factors on the excess mortality of black adults in the United States. *Journal of the American Medical Association*, 263, 845-850.

- Pappas, G., et al. (1993). The increasing disparity in mortality between socioeconomic groups in the United States, 1960 and 1986. *New England Journal of Medicine*, 329, 103-109.
- Pienta, A., Hayward, M., and Jenkins, K. (2000). Health consequences of marriage for the retirement years. *Journal of Family Issues*, 21 (5), 559-586.
- Preston, S. H. and Elo, I. T. (1995). Are education differentials in adult mortality increasing in the United States? *Journal of Aging and Health*, 7, 476-496.
- Preston, S. H., Elo, I. T., Rosenwaike, I., and Hill, M. (1996). African-American mortality at older ages: Results from a matching study. *Demography*, 33, 193-209.
- Rahkonen O., and Takala, P. (1998). Social class differences in health and functional disability among older men and women. *International Journal of Health Services*, 28 (3), 511-524.
- Rogers, R. G. (1992). Living and dying in the USA: Sociodemographic determinants of death among blacks and whites. *Demography*, 29, 287-303
- Rogers, R. G., (1995). Marriage, sex and mortality. *Journal of Marriage and the Family*, 57, 515-526.
- Rogers, R. G., Hummer, R. A., and Nam, C. B. (2000). *Living and dying in the USA: Behavioral, health and social differentials of adult mortality*. San Diego, CA: Academic Press.
- Ross, C., Mirowsky, J., and Goldsteen, K. (1990). The impact of the family on health: The decade in review. *Journal of Marriage and the Family*, 52, 1059-1078.
- Satariano, W. A. (1986). Race, socioeconomic status and health: A study of age differences in a depressed area. *American Journal of Preventive Medicine* 2, 1-5.
- Smith, J. P., and Kington, R. (1997). Race, socioeconomic status, and health in late life. In L. Martin and B. Soldo (Eds.), *Racial and Ethnic Differences in the Health of older Americans* (pp. 105-162). Washington, D.C.: National Academy Press.
- Sorlie, P. D., et al. (1992) Black-white mortality differences by family income. *Lancet*, 340, 346-350
- StatCorp (2001). *Stata statistical software: Release 7.0*. Stat Corporation: College Station, TX.

Stewart, A., Greenfield, S., Hays, R., Wells, K., Rogers, W., Berry, S., McGlynn, E., and Ware, J. (1989). Functional status and well-being of patients with chronic conditions. *Journal of the American Medical Association*, 262 (7), 907-913.

Stolzenberg, R. M. (Forthcoming). It's about time and gender: The effect of wife's and husband's employment on their own and each other's health. *American Journal of Sociology*.

Timmreck, T.C. (2002). *An Introduction to Epidemiology, Third Edition*. Sudbury, Mass.: Jones and Bartlett.

Umberson, D. (1987). Family status and health behaviors: Social control as a dimension of social integration. *Journal of Health and Social Behavior*, 28: 306-19.

Verbrugge, M. (1979). Marital status and health. *Journal of Marriage and the Family*, 41, 267-285.

Verbrugge, M. and Jette, A. M. (1994). The disablement process. *Social Science and Medicine*, 38, 1-14.

Verbrugge, L. M., Gates, D.M., and Ike, R.W. (1991). Risk factors for disability among US adults with arthritis. *Journal of Clinical Epidemiology*, 44 (2), 167-182.

Waite, L. J. Gallagher, M. (2000). *The Case for Marriage: Why married people are happier, healthier, and better off financially*. New York: Doubleday.

Waldron, I., Hughes, M. E. and Brooks, T. L. (1996). Marriage protection and marriage selection—prospective evidence for reciprocal effects of marital status and health. *Social Science and Medicine*, 43, 113-123.

Waldron, I., Weiss, C. C., and Hughes, M. E. (1997). Marital status effects on health: Are there differences between never married women and divorced and separated women? *Social Science Medicine*, 45 (9), 1387-1397.

Wallace, R., and Herzog, A. R. (1995). Overview of the health measures in the health and retirement study. *The Journal of Human Resources*, 30, S84-S107.

World Health Organization (1980). *International classification of impairments, disabilities, and handicaps*. Geneva: World Health Organization.

Wyke, S., and Ford, G. (1992). Competing explanations for associations between marital status and health. *Social Science Medicine*, 34, 523-532.

Zick, C. D. and Smith, K. R. (1991). Marital transitions, poverty, and gender differences in mortality. *Journal of Marriage and the Family*, 53, 327-336.

Table 1: Marital Status, by Sex and Race

Marital Status	White Men	Black Men	White Women	Black Women
Married	81.9%	61.5%	71.1%	39.5%
Cohabiting	2.4%	7.3%	1.5%	1.6%
Separated	1.4%	10.5%	1.8%	10.2%
Divorced	9.2%	9.0%	13.1%	21.3%
Widowed	1.4%	4.6%	9.5%	18.5%
Never Married	3.7%	7.1%	3.0%	8.7%
	<i>100.0%</i>	<i>100.0%</i>	<i>100.0%</i>	<i>100.0%</i>
<i>N=</i>	<i>3,377</i>	<i>704</i>	<i>3,604</i>	<i>962</i>

Data exclude all individuals who identify themselves as hispanic. All individuals are aged 51-61 in 1992.

TABLE 2: Sample Characteristics

Variable	White Men (N=3,377)						Black Men (N=704)					
	All		Married		Unmarried		All		Married		Unmarried	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age	55.98	3.18	56.05	3.18	55.65	3.16	55.80	3.10	55.67	3.02	56.02	3.22
Log Wealth	10.79	2.53	10.98	2.13	9.93	3.73	8.26	4.18	9.43	3.24	6.40	4.80
BMI	27.17	4.08	27.30	3.97	26.61	4.50	27.15	5.46	27.67	5.67	26.31	5.01
	<u>Rel. Freq.</u>		<u>Rel. Freq.</u>		<u>Rel. Freq.</u>		<u>Rel. Freq.</u>		<u>Rel. Freq.</u>		<u>Rel. Freq.</u>	
Non-Smoker	73.2%		75.5%		62.6%		60.8%		66.8%		51.3%	
Smoker	26.8%		24.5%		37.5%		39.2%		33.2%		48.7%	
Schooling (years)												
0-8	8.1%		8.0%		8.8%		20.9%		18.8%		24.4%	
9-11	11.8%		11.8%		11.9%		21.2%		21.2%		21.2%	
12	34.2%		34.8%		31.3%		31.7%		32.9%		29.7%	
13-15	19.9%		19.2%		23.2%		16.8%		16.5%		17.2%	
16	11.5%		12.1%		8.4%		4.1%		4.3%		3.8%	
17+	14.5%		14.1%		16.5%		5.3%		6.3%		3.7%	
Variable	White Women (N=3,604)						Black Women (N=962)					
	All		Married		Unmarried		All		Married		Unmarried	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age	56.01	3.20	55.95	3.17	56.16	3.24	55.91	3.18	55.53	3.13	56.16	3.18
Log Wealth	10.63	2.79	11.06	2.02	9.55	3.91	7.49	4.67	9.34	3.26	6.28	5.04
BMI	26.34	5.41	26.18	5.10	26.73	6.10	29.65	6.25	29.60	5.88	29.68	6.49
	<u>Rel. Freq.</u>		<u>Rel. Freq.</u>		<u>Rel. Freq.</u>		<u>Rel. Freq.</u>		<u>Rel. Freq.</u>		<u>Rel. Freq.</u>	
Non-Smoker	73.6%		77.6%		63.9%		75.2%		81.3%		71.1%	
Smoker	26.4%		22.4%		36.1%		24.9%		18.7%		28.9%	
Schooling (years)												
0-8	4.9%		4.3%		6.5%		13.4%		11.8%		14.5%	
9-11	15.2%		14.3%		17.4%		27.4%		22.5%		30.7%	
12	43.6%		45.6%		38.7%		31.4%		36.7%		28.0%	
13-15	20.1%		20.5%		19.3%		15.7%		16.7%		15.0%	
16	7.6%		7.9%		6.7%		5.9%		5.8%		6.0%	
17+	8.6%		7.4%		11.4%		6.1%		6.5%		5.9%	

Note: SD=Standard Deviation; Rel. Freq.=Relative Frequency; Log Wealth=natural log of net household wealth; BMI=Body Mass Index. Data exclude all individuals who identify themselves as hispanic. All individuals are aged 51-61 in 1992.

TABLE 3: Disability Prevalence

White Men					Black Men				
	N	Any Disability	Level 1: Work/Home Disability	Level 2: ADL Disability		N	Any Disability	Level 1: Work/Home Disability	Level 2: ADL Disability
<i>All</i>	3,377	0.233	0.157	0.076	<i>All</i>	704	0.318	0.194	0.123
<i>Married</i>	2,841	0.222	0.151	0.072	<i>Married</i>	452	0.263	0.184	0.078
<i>Unmarried</i>	536	0.278	0.184	0.094	<i>Unmarried</i>	252	0.405	0.210	0.195

White Women					Black Women				
	N	Any Disability	Level 1: Work/Home Disability	Level 2: ADL Disability		N	Any Disability	Level 1: Work/Home Disability	Level 2: ADL Disability
<i>All</i>	3,604	0.257	0.180	0.077	<i>All</i>	962	0.334	0.168	0.166
<i>Married</i>	2,678	0.246	0.180	0.067	<i>Married</i>	409	0.235	0.115	0.120
<i>Unmarried</i>	926	0.283	0.180	0.103	<i>Unmarried</i>	553	0.399	0.203	0.196

Note: N=number of observations; Prev.=prevalence; CI=Confidence Interval. Level 1 and Level 2 disability are mutually exclusive (Level 1 includes those with work/home disability only). Data exclude all individuals who identify themselves as hispanic. All individuals are aged 51-61 in 1992

TABLE 4: Ordered Logit Estimates, by Sex and Race

<u>Variable</u>	<u>White Men</u>			<u>Black Men</u>			<u>White Women</u>			<u>Black Women</u>		
	<u>Coeff.</u>	<u>SE</u>	<u>T-stat</u>	<u>Coeff.</u>	<u>SE</u>	<u>T-stat</u>	<u>Coeff.</u>	<u>SE</u>	<u>T-stat</u>	<u>Coeff.</u>	<u>SE</u>	<u>T-stat</u>
Age	.06	.01	4.62	.02	.03	.86	.05	.01	4.04	.04	.02	1.48
<u>Schooling (years)</u>												
0-8	--	--	--	--	--	--	--	--	--	--	--	--
9-11	-.32	.17	-1.86	.02	.26	.07	-.27	.19	-1.45	-.08	.21	-.38
12	-.59	.15	-3.97	-.22	.24	-.95	-.58	.18	-3.26	-.48	.22	-2.19
13-15	-.75	.16	-4.58	-.12	.29	-.41	-.67	.19	-3.49	-.80	.30	-2.64
16	-.77	.19	-3.98	-.45	.37	-1.22	-.85	.23	-3.61	-.81	.51	-1.58
17+	-.96	.19	-5.07	-.59	.48	-1.21	-1.03	.24	-4.37	-1.57	.46	-3.40
Log Wealth	-.13	.02	-7.26	-.09	.02	-4.53	-.11	.01	-7.91	-.08	.02	-4.57
Smoker (yes=1)	.15	.10	1.53	.18	.18	.98	.13	.09	1.39	-.08	.18	-.47
BMI	.05	.01	4.45	.00	.02	-.27	.06	.01	7.86	.06	.01	5.12
Single (yes=1)	.19	.12	1.64	.38	.18	2.06	-.06	.10	-.66	.43	.17	2.62
N=	3,377			704			3,604			962		
Pseudo-R ²	.046			.056			.062			.117		

Note: Coeff.=unstandardized regression coefficient; SE=Standard error;. Log Wealth=natural log of net household wealth; BMI=Body Mass Index. Omitted reference categories are 0-8 for years of schooling. Confidence intervals are based on robust (heteroskedasticity-consistent) standard errors. All estimates, including confidence intervals, are calculated using STATA 7. Data exclude all individuals who identify themselves as hispanic. All individuals are aged 51-61 in 1992.

TABLE 5: Model-Based Marital Status Effects

White Men				Black Men			
	Any Disability	Level 1: Work/Home Disability	Level 2: ADL Disability		Any Disability	Level 1: Work/Home Disability	Level 2: ADL Disability
<i>All</i>	0.223	0.156	0.067	<i>All</i>	0.310	0.198	0.112
<i>Married</i>	0.216	0.152	0.065	<i>Married</i>	0.279	0.181	0.098
<i>Unmarried</i>	0.251	0.174	0.078	<i>Unmarried</i>	0.360	0.224	0.136

White Women				Black Women			
	Any Disability	Level 1: Work/Home Disability	Level 2: ADL Disability		Any Disability	Level 1: Work/Home Disability	Level 2: ADL Disability
<i>All</i>	0.243	0.177	0.066	<i>All</i>	0.312	0.174	0.137
<i>Married</i>	0.247	0.179	0.068	<i>Married</i>	0.257	0.149	0.108
<i>Unmarried</i>	0.235	0.171	0.064	<i>Unmarried</i>	0.348	0.191	0.157

Note: Values represent predicted disability levels based on regression coefficients in Table 3, holding other variables constant at their mean values. Data exclude all individuals who identify themselves as hispanic. All individuals are aged 51-61 in 1992