Age-Linked Institutions and Age Reporting among Older African Americans

Mark E. Hill, Samuel H. Preston, Irma T. Elo and Ira Rosenwaike

PARC Working Paper Series

WPS 95-05

Age-Linked Institutions and Age Reporting

among Older African Americans [*]

Mark E. Hill, *University of Pennsylvania*

Samuel H. Preston, *University of Pennsylvania*

Irma T. Elo, *University of Pennsylvania*

Ira Rosenwaike, *University of Pennsylvania*

September 1995

Age-Linked Institutions and Age Reporting among Older African Americans

Abstract

With economic and technological development, numerical age became an important dimension of social differentiation in the United States. The vast majority of Americans now have the ability to report their own age and the ages of relatives with accuracy. Nevertheless, studies have found that age misreporting remains substantial for older African Americans. This paper describes levels of age misreporting and investigates the determinants of age reporting accuracy on the death certificates of a national sample of native-born African Americans aged 65+. Consistent with previous studies, levels of age misreporting are found to be high. When checked against childhood census records, only 53% of the death certificate ages are found to be correctly reported; slightly over 10% are misstated by five years or more. Multivariate results provide compelling evidence that the quality of age reporting critically depends on interaction with age-linked institutions.

Age-Linked Institutions and Age Reporting among Older African Americans

Because many social and demographic phenomena are strongly influenced by age, quantitative research in the social sciences depends on accurate age reporting. However, as Ewbank (1981:87) notes in his review of age misreporting and age-selective underenumeration, "all too frequently we settle for estimates that we realize are affected in some unknown way by [age] misreporting." Unfortunately, little is known about why age misreporting occurs, a problem that hinders our ability to recognize and deal with it effectively (Ewbank 1981; Krishnamoorthy and Muthiah 1985; Seltzer 1973). Consequently, social scientists concerned with age-sensitive processes could greatly benefit from further elucidation of the factors that engender age misreporting.

Despite a growing literature on the topic, studies of age reporting generally have been limited to the evaluation and correction of biases on aggregate-level demographic estimates; investigation of the factors engendering age errors has been relatively neglected (Ewbank 1981; Mason and Cope, 1987; Saxena, Verma and Sharma 1986). Focusing on the American social-historical context, we attempt to shed light on some of these factors by exploring the institutional determinants of age accuracy among African American elders. Our interest, however, extends beyond concerns about data quality; we believe that widespread age misreporting among African Americans is a substantive issue worthy in itself of further inquiry.

Previous studies have uncovered relatively high levels of age misreporting for African Americans, especially at advanced ages. The Matched Records Study of 1960 evaluated age reliability using a linked sample of census records and death certificates (NCHS 1968). Researchers found that among matched records only 45% of nonwhite males and 37% of

nonwhite females had ages that were reported consistently in both sources. More recently, Kestenbaum (1992) compared death certificate ages with ages reported in Social Security Administration files for a 1987 sample of deaths in Texas and Massachusetts of persons aged 65+. The study found that only 73% of matched cases among blacks exhibited agreement on age in single years compared with 95% agreement among non-Hispanic whites. An expansion of this study using a national sample of African Americans reported to be aged 65+ at time of death in 1985 found age agreement in single years on 63% of matched death and social security records (Elo et al. 1995). [1]

While these record linkage studies have uncovered striking levels of age inconsistency for older African Americans, it has been impossible to establish in inconsistent cases whether one or both records are in error. Indeed, the quality of age data for aged African Americans remains dubious in both census and, to a lesser extent, Medicare/Social Security Administration records (Coale and Kisker 1990). A vastly superior method of age validation corroborates reported age using the subject's birth certificate, the document of highest probative value (Hambright 1969; Social Security Administration 1977). Such a study, however, is not currently feasible for a national sample of aged subjects since birth registration in the United States was seriously deficient well into the 20th century. As late as 1959, a birth certificate could be located for less than one-third of a sample of persons aged 45 years and over (NCHS 1968). This proportion would undoubtedly have been lower for blacks since they were predominantly born in southern states, which were among the last to join the Birth Registration Area.

As an alternative, Rosenwaike and Logue (1983) used census records recorded early in life as a proxy for birth certificates. The authors linked a sample of Pennsylvania and New Jersey

death certificates from 1968-1972 for elderly decedents purportedly aged 85+ to records for the same individuals in the U.S. Census of 1900. The study uncovered substantial ag e inconsistencies for African Americans. Of the l inked cases, only 40% of black decedents had an age on the death certificate that agreed with the age in single years reported on the early census record.

Our study employs the approach used by Rosenwaike and Logue. We linked a representative sample of death certificates f or blacks reported to be aged 65+ to early-life census records for the same individuals. This paper has two obje ctives: (1) to describe the extent of age misreporting on the death certificates of African Americans aged 65+; (2) to elucidate and test a model of ag e reporting accuracy based on the premise that age knowledge is strongl y conditione d by institutional factors (Chudacoff 1989; Fortes 1984). The biasing effect of ag e misstatement on observed bla ck mortality rates has been addressed elsewhere (see Preston et al. 1995).

Data and Methods

The Death Certificate Database and Record Linkage

The database emplo yed in this study is a subsample of that used by Preston et al. (1995) to produce corrected mortality rates for elderly African America ns. It is comprised of 3760 death certificates for native-born African Americans reported to be aged 65 or above at time of death in 1985. The primary sample is a nationally representative sample of all 2714 deaths to African Americans aged 65 + (according to the death certificate) occurring from January 1 to January 7, 1985. The national sample is bolstered by an oversample of all 1046 deaths to Maryland-born

3

African Americans aged 65+ occurring from January 8 to May 31, 1985.

Census records for sampled decedents were obtained from the 1900, 1910, and 1920 population censuses. Record linkage was accompli shed using locator forms containing pertinent linkage informatio n for each decedent. Linkage relied heavily on microfilm copies of Soundex index records, which catalog household hea ds and unrelated individuals using a phonetic coding system. Soundex records are organized by state of re sidence and then alphabetically by surname of the household head or unrelated individual. These records list the household's place o f residence and the full name, relationship to the household head, state of birth, and age of each member of the household; index records for the 1900 census also include mont h and year of birth. For further details regarding record linkage procedures see Preston et al. (1995).

Altogether, early census records were located for 2153 of the 3760 subjects (57.3%) ; 16.6% were located in the census of 1900, 20.2% in th e census of 1910, and 63.2% in the census of 1920.[2] Because age information was not reported on the census record for one matched case, the analyses are based on 2,152 cases. Table 1 presents census matching results by deat h certificate age. As anticipated, the percentage of records linked increased with reported age at death, probably because of the greater number of census records available for older cases ; subjects with true ages at death of 65-74 in 1985 could only be matched to the 1920 census , whereas tho se born on or before June 1, 1900 (the date of the 1900 census) had the potential to be found in all three censuses (1900, 1910, and 1920).

[TABLE 1 ABOUT HERE]

Decedents whose true date of birth fell after January 1, 1920 (the 1920 census date) could not possibly be matched to a early census record. This truncation problem has the potential to

4

distort age validation findings at the youngest ages; becaus e only death certificates with ages 65+ were selected, persons whose t rue age fell in this age range but whose reported age on the death certificate was less than 65 were not sampled. Thus, findings for the 65-69 age group ma y understat e age reporting errors and should be interpreted with caution. In our multivariat e analyses, we employ a dichotomous control variable for death certificate ages 65-69 to adjust for any bias introduced as a result of truncation.

Assessing Death Certificate Age Reporting Errors

In order to calculate an age at death from the census record, it is necessary to introduce information on month and day of birth. For subjects matched to the 1 900 census (the only census used in this study for which date-of-birth available was available), age at death was calculated from the year and month of birth recorded on the census record; day of birth and date of death for these cases was taken from the death certificate. For subjects matched to other censuses, we used age from the census record and day and month of birth and date of death from the deat h certificate to calculate age at death.

The validity of death certificate age was assessed through comparison with the census-based age at death. Thr oughout this paper we refer to the death certificate age as valid/accurate (misreported/ina ccurate) if it was found to agree (disagree) with the age at death implied by the subject's early census record. However, several allowances were made. First, complication s arose when the age reported on the death certificate was internally inconsistent with the date of birth reported on the same certifi cate. Inconsistencies of this type occurred in 109 (2.9%) of the 3741 sampled death records that contained both age and date-of-birth information. (While al l sampled death records had to list an age at death in accordance with our selection protocol, 19

5

lacked the date-of-birth information necessary to allow calculation of age at death.) We deal t with such inconsistencies by judging death certificate ages to be valid if the census-based ag e agreed with either the stated age or the implied age a t death calculated using the date of birth and date of death listed on the death certificate.

Further, it was not uncommon for ages reported in the matched census records to b e exaggerated by one year in anticipation of a birthday (Preston et al. 1995). We dealt with this problem by judging ages to be in agreement when the subject's census-based age at death was one year greater than that of the death certificate [3] and his or her birthday fo llowed within two calendar months of the official census date. This rule affected 126 (5.9%) of the 2152 matched cases.

Proxy Informants and Age Accuracy

The sources of age information provided on death certificates has potentially important implications for theories about the causes of age misreporting. In the United States, funera l directors are responsible for completing all personal information on the death certificate , including age (NCHS 1987). Typically, they collect this information from relatives of th e deceased. Th e literature on data collection using proxy informants suggests that close relatives (e.g., spouses and adult children) generally provide the most accurate pro xy information (Rodgers and Herzog 1992). For this reason we expected to find substantial differences in the quality of age reporting by informant relationship--with the closest relatives providing the most accurate information. We tested this hypothesis using informant relationship data provided on deat h certificates in th e following registration areas where this information was available: California, Colorado, District of Columbia, Georgia, Illinois, Massachusetts, New York City, and Nort h

Carolina.[5]

Table 2 presents age agreement results by informant relationship. Findings are presented for both the percentage of matched records exhibiting exact age agreement and the percentage of matched records for which ages agree within one year. Contrary to our expectations, spouses, siblings, and adult children actually exhibi ted the lowest levels of exact age agreement, although difference s among informant type were not substantial. When age agreement was expanded to within one year, spouses fared slightly better than average (79.4% compared with 76.5%) ; neverthe less, differences remained small and statistically insignificant. [5] Age information wa s apparently collected from medical or administrative records in 12.1% of the cases; yet despite the strong likelihood that these ages had been initially self-rep orted, they were no more accurate than those collected from proxy informants.

[TABLE 2 ABOUT HERE]

Hence, the information source appeared to have little affect on the quality of deat h certificate age reporting. These findings sugge st that the principal source of death certificate age misreporting among older African Americans is imprecise age accounting on the part o f decedents themselves.

Theoretical Considerations

Age Relevance and Age-linked Social Institutions

While the quality of age reporting appears to be relatively good in several developin g countries where date of birth has longstanding astrological significance, [6] accurate age reporting is generally a feature of developed societies (Ewbank 1981; Seltzer 1973; see also Coale an d

Kisker 1986). In westernized nations, numerical age has gained in importance as it has come to be employed more and more as a means of social organization and differentiation (Chudacoff 1989; Fortes 1984). Not only do many American institutions attach scientifically-defined biological and psychological characteristics to specific ages, but they enforce roles and rewards in such a way that individuals experience age-based social mobility, receiving greater or lesser rewards, upon crossing socially and/or legally defined age thresholds (Chudacoff 1989; Keith 1990; Mayer and Muller 1986). [7] Following Fortes (1984), we refer to such institutions as age-linked institutions. Schools, the military, Social Security, and Medicare are among the most prominent of these institutions.

Consequently, the norm of keeping track of one's precise age and the ages of close relatives in the United States can be understood primarily as a byproduct of the development and expansion of age-linked institutions (Chudacoff 1989; Fortes 1984). According to Chudacoff (1989:5):

> Awareness of age and the age grading of activities and institutions were part of a larger process of segmentation within American society during the late nineteenth and early twentieth centuries. These periods marked an era in which science, industry, and communications influenced people's lives in revolutionary ways. New emphases on efficiency and productivity stressed measurement as a means of imposing order and predictability on human life and the environment. . . . Age became a prominent criterion in this process.

While the expansion of age-linked institutions has greatly increased the salience of numerical age in American society, these institutions impinge with varying intensity upon different sectors of society. This point is of special relevance to elderly African American due to racial differences in access to and participation in such institutions. As an illustration, more than three-fifths of black workers, primarily those employed in agriculture and domestic service,

8

were initially ineligible for old-age insurance coverage under the Social Security Act of 1935, although coverage of this model age-linked program expanded greatly during the 1950 s (Quadagno 1994).

We hypothesized that individuals with greater contact with modern age-linked institutions would attach greater importance to numerical age and exhibit more accurate recall as indicated by higher levels of valid age reporting. Hence, seven indices of mainstream interaction an d participation were operationalized. We exp ected each index to be positively associated with age accuracy.

Literacy. Our measure of literacy is the percentage of blacks aged 10+ reported in the 192 0 census to be literate in the county of early-census residence (U.S. Bureau of the Census 1935). This variable is highly correlated with the percentage of black children aged 6-14 attendin g school. As such, it is an ecological measure indicating local educational and social conditions present for African Americans in the county. Education enforces age norms (Chudacoff 1989) and is a fundamental agent of socialization and ideational change. [8] More directly, schoo l transcripts that record age information are often used as official proof of age (e.g., by the Social Security Administration [1977]); such records may be important in reducing recall errors.

Vital Registration Coverage. This measure utilizes information from a special study conducted by the Social Se curity Administration (1977). It provides an estimate of the percentage of civil birth records available by state of birth for retirement and survivors benefit claimants whos e claims were adjudicated in 1973 and 1974. We coded this information by the state of birth listed in the linke d census record. The production and storage of official records is paramount where social privileges and responsibilities depe nd on strict age criteria (Byteway 1990; Fortes 1984).

9

Estimates of birth registration coverage quantify the diffusion of the bureaucratic apparatus charged with assigning the documentation used to determine the age-linked rights and duties of individuals.

Veteran Status. Veteran status, as indicated on the death certificate, was coded for men only. Because several registration areas did not collect this information, veteran status was available for 837 (79%) of the matched records for males. [9] For this reason, three categories were constructed: veteran, non-veteran, and not reported. The American military services are archetypal age-linked organizations in that they have specific age criteria for enlistment, conscription, retirement, etc. Furthermore, the services provide service members with legal documents (e.g., discharge papers) containing date of birth used to secure special benefits reserved for veterans.

Interracial Contact. This dichotomous categorical variable indicates whether the black population in the county of early census residence was less than or greater than 10 percent in 1910, roughly the percentage for the nation as a whole (U.S. Bureau of the Census, 1913). Black children raised in integrated locales tend to have greater access and participation in mainstream institutions during their lives (Clark 1965; Massey and Denton 1992). [10]

Occupational Status. Occupational Status was determined from the "usual occupation" reported on the death certificate. [11] Occupational status provides an index of social and economic integration (Farley and Allen 1987).

Metropolitan Residence. This categorical variable indicates whether the decedent's last place of residence was in a Metropolitan Statistical Area as of 1980 (U.S. Bureau of the Census 1983). In general, persons living in or near cities have greater access to and interaction with modern

10

institutions than those living in more remote areas.

Migration from the South. This variable has three classes. Subjects were coded as permanent migrants if they were born in the South (according to ea rly census records) but resided elsewhere at time of death (accord ing to the death certificate); all other southern-born subjects were coded as nonmigrants. A residual group contains persons born outside the South (added as a control for those persons not at risk of migration from the South). Historical and census data indicate that, for the cohorts relevant to this study, African-American migr ants were qualitatively different from southern nonmigrants in terms of their mains tream relationships. For example, they tended to find better job opportunities and to attain higher earnings and more schooling than southern black nonmigrants (U.S. Bureau of the Census 1969; Farley and Allen 1987). Furthermore , having left the historically segregationist South, black migrants gained vastly greater access to mainstream social and political institutions (Grossman 1989).

Social Desirability and Age Understatement

While the hypothesized effect of greater interaction with age-linked institutions is t o reduce age misreporting, we did not expect errors to be random in direction. The drive t o represent oneself in a manner that bolsters social desirability often nullifies the norm of honest self-presentation (Sudman and Bradburn 1982). American men and women express a clea r preference for appearing young, and as they age many employ techniques of age concealment-- including deliberate age understatement--in hop es of being perceived by others as more youthful (Harris 1994). A recent study (Clarke, Hill, and Riddley 1995) found such concerns to b e important to Afric an-American elders. Therefore, we expected age reporting errors to be in the direction of net age understatement with one important qualification: due to the well-know n

11

phenomenon of age exaggeration among Americans putatively aged 100 and a bove (Coale 1991), we anticipated this pattern to change into one of net age exaggeration in the oldest age groups. Since persons who do not know their true ages would seem to have a greater opportunity t o "choose" their own age, such directional biases would not be inconsis tent with the hypothesis that age ignorance is the primary grounds for age misreporting. [12]

Americans perceive aging as substantially more negative for women than for me n (Jackson 1992; Nielsen 1990; Richmond-Abbott 1992). Therefore, older women appear to be more likely to conceal or even misrepresent their true ages than men (Clarke, Hill, and Riddley 1995; Harris 1994). [13] For this reason we expected females to exhibit significantly lower levels of age accuracy and more extreme levels of understatement than males.

Results

Age Reporting by Age and Sex

Table 3 pre sents the distribution of death certificate age reporting errors for the national sample (not including the Maryland-born oversample). Consistent with past studies of African American age reporting, levels of age error were high. Only 5 2.8% of matched cases had the age at death on the death certificate that would be expected from the cens us record. Ages on matched records disagreed by two or more years for 26.9% of t he decedents; 10.5% had ages at death that differed by fi ve years or more in the two sources. Results by five-year age groups indicate that levels of exact age agreement declined steadily and dramatically as true age increased . Meanwhile, the percentage of ages in error by at leas t five years also increased substantially with age.

[TABLE 3 ABOUT HERE]

As expected, age understatement was much more common than age exaggeration. This pattern is shown more clearly in Table 4 (which includes the Maryland-born oversample with appropriate sampling weights). For men and women combined, 32.1% of the death certificate ages were too young relative to the census ages while only 15.3% were too old. Age agreement results by age group presented in Table 4 indicate that understatement persisted in all intervals (through ages 95+), with the most extreme understatement observed among the 85-89 age group; 41.1% of the reported ages for this group were understated compared to 15.2% that were overstated--a ratio of 2.7. Nevertheless, age overstatement increased with true age, from around 14% among African Americans aged 70-74 to over 30% for those aged 95+.

As hypothesized, the death certificates of females exhibited substantially lower levels of age agreement with early census records than those of males. Among matched cases, 57.3% of the death certificates of males aged 65+ reported an age consistent with the early census record compared with only 47.9% for females (Table 4). This gender pattern was observed in all age groups. While age understatement was much more common than age overstatement among both men and women, this tendency was particularly pronounced for females (38.3% compared to 26.0% for men). This pattern persisted in all age groups. Conversely, a higher percentage of men exhibited age overstatement than did females--a difference also observed in every age interval. Overstatement among men was particularly severe in the 90-94 age group (40.8%), while understatement fell to only 13.2%, thus exhibiting a temporary crossover in misreporting patterns.

[TABLE 4 ABOUT HERE]

Table 5 presents mean age errors in years by age group and sex. Mean error provides an index of net age misreporting bias. Because the range of possible age understatement was severely truncated for the 65-69 year olds, results are presented only for persons aged 70+. (In light of the widespread interest in age exaggeration among the oldest old, results for persons aged 100+ were kept separate, despite small numbers.) As expected, death certificate age misreporting was not random but showed a pattern of net understatement for both males and females. Consistent with our gender hypothesis, females exhibited substantially greater net understatement than men (mean error of -1.15 years for the former compared with -0.34 years for the latter). This finding was not influenced by the relatively older age distribution of female deaths, as seen in both the age-specific and age-adjusted results. Furthermore, the absolute values of errors were greater for women in all age groups except 100+. While reporting errors among women were in the direction of understatement until age 100+, errors for men crossed from mean understatement to mean exaggeration in the 90-94 age group.

[TABLE 5 ABOUT HERE]

Age Accuracy by Selected Characteristics

Table 6 presents bivariate results for age agreement tabulated by selected characteristics, including our seven indices of interaction with mainstream age-linked institutions. Continuous variables are grouped into high and low intervals at the median of all matched cases combined. As expected, results presented in Table 6 indicated that individuals with higher levels of mainstream interaction, as gauged by each of our seven indices, exhibited higher levels of age reporting accuracy. Differences by marital status were also uncovered, with widows/widowers

14

exhibiting substantially lower age agreement than persons of other marital statuses. One might suspect that this result reflected the fact that spouses of married persons were likely to supply more accurate information on the death certificate; Table 2 indicates, however, that spouses were no more accurate than other informants.

[TABLE 6 ABOUT HERE]

We employed dichotomous logistic regression to determine whether the bivariate differences uncovered in Table 6 persisted within a multivariate framework. Table 7 presents logistic regression coefficients and odds ratios for the model predicting death certificate age reporting accuracy. As discussed previously, a variable indicating whether the subject was reported on the death certificate to be age 65-69 in 1985 was added to control for the truncation problem affecting this group.

Multivariate results provide overwhelming support for the hypothesized relationship between mainstream participation and age accuracy. Occupational status followed the predicted pattern of higher status occupations exhibiting significantly greater age accuracy relative to farmers/farm laborers--the occupational group generally most isolated from mainstream participation. African Americans classified in the white collar and not reported categories had the highest odds of age agreement relative to farmers/farm laborers (odds ratio of 1.67), followed thereafter by service and domestic worker (odds ratio of 1.56), craftsmen/operatives (odds ratio of 1.32) and finally non-farm laborers (odds ratio of 1.28).

[TABLE 7 ABOUT HERE]

Results for our migration, literacy, county racial composition, and birth registration coverage variables also displayed the predicted pattern. Age agreement was greater for migrants

from the South relative to southern-born nonmigrants (odds ratio of 1.30); one the other hand, age reporting among persons born outside of the South (added as a control) was substantiall y worse than that of southern nonmigrants once institutional factors were considered (odds ratio of 0.54). Literacy in 1920 among African Americans in the census county of residence was a particularly important determinant of age agreement. Results for this continuous variable suggest that each 10% increase in black literacy engendered 1.14 greater odds of age agreemen t ($e^{(.01337)*10}$). Persons raised in c ounties with 0-10% of the total population reported as black in the 1910 census exhibited substantially better odds of age agreem ent than those in disproportionately black counties (odds ratio of 1.75). Finally, birth registration coverage exhibited a powerfu l association with age agreement; results suggest a 10% increase in birth registration coverag e increased the odds of age agreement by a factor of 1.158 ($e^{(.01472*10)}$). Of our indices o f mainstream institutional interaction, o nly metropolitan residence at the time of death failed to be a statistic ally significant predictor of age agreement. Marital status, included primarily as a control, also failed to be a statistically significant predictor of age accuracy. This result i s consistent with the absence of better accuracy for spousal informants shown in Table 2.

Other multivariate f indings presented in Table 7 are of interest. The pronounced gender patterns found in Tables 4 through 6 pe rsisted in the multivariate analysis, with males exhibiting greater odds of age agreement than their female counterparts (odds ratio of 1.46). Age at death also continued to exert the powerful negative influence on age accuracy found earlier in Tables 3 through 5. Each one-year increase in true age decreased the odds of age agreement by a multiple of 0.95. Interpretation of this strongly negative association is less than straightforward, however. To some extent, this pattern probably reflects cohort effects, since, holding all els e

16

constant, persons born more recently had greater access to pubic education a nd other modern age-linked institutions. Never theless, biological effects associated with age are also likely given the decline in recall and cognitive proficiency associated with advanced age (Rodgers and Herzog 1992).

The quality of age reporting among Maryland-born decedents is of interest becaus e Maryland was the first so uthern state admitted to the Birth Registration Area (in 1916) (Shapiro 1950) and consequently has been found to have bet ter birth certificate availability for elders than other southern states (Deutch 1973). As hypothesized, age agreement for Maryland-born subjects was substantially higher than that of subjects in the national sample. Of matched cases born in Maryland, 62.7% had a death certi ficate that agreed with the early census record (Table 6); only 4.1% of the Maryland-born cases had ages that disagreed by five years or more (not shown) compared to 10.5% in the na tional sample (Table 3). Further analysis indicated that greater age accuracy among Maryland-born cases persisted within all five-year age groups. Whe n institutional factors were considered, however, age agreement among Mary land-born persons was no longer significantly different (Table 7). This finding suggests that higher levels of ag e accuracy among the Maryland-born sample are due to Maryland' s earlier development of modern educational and vital registration systems compared with other states with sizable blac k populations.

Veteran status, our final index of institutional interaction, displayed the anticipate d relationship with age accuracy, as determined by age agreement on matched records. In a separate multivariate analysis performed with on ly the 1075 matched cases for men (not shown), we added veteran status to the logistic model presented in Table 7. Results indicated tha t

17

veterans had 1.44 greater o dds of age agreement than men who did not perform military service (p<.05). Cases for which veteran status was not reported also appeared to have slightly higher odds of age accuracy than non-veterans (odds ratio of 1.24), although this difference was no   t statistically significant.

Discussion

This paper has described levels of age misreporting and investigated potentia l determinants of age accuracy for older Africa n Americans. Consistent with the findings of other matched record studies, levels of death certificate age misreporting for   this population were found to be high. Only 53% of a nationally r epresentative sample of native-born black decedents aged 65+ had ages reported on their death certificates that were consistent with those reported o   n census re cords during the first years of their lives; slightly over 10% had errors of five years or more.   Age reporting was far more accurate for men than for women, even when potentiall   y confounding factors were controlled (odds ratio of 1.46).

More surprising was the unanticipated finding that informant relationship had littl e bearing on the quality of age information reported on death certificates. Berger   and Luckman (1967:43) have characterized the "social stock of knowledge" as something differentiated b   y degrees of familiarity: "It provides complex and detailed information concerning those sectors of everyday life with which I must frequently deal. It provi   des much more general and imprecise information on remoter sections." Despite our expectation that   close relatives would maintain the largest stock of knowledge concerning deceden ts, the age data provided by spouses, siblings, and adult ch ildren were no more accurate than that supplied by more distant relations. Th   e

surprisingly inaccurate age data provided by close relatives suggests that exact numerical age

lacks salience in the family lives of many African Americans. Ethnographers have remarked

upon this apparent indifference to numerical age in their research of the social networks and

community organizations of older African Americans. Peterson (1990:213), for example,

observes in her study of elderly African American churchwomen that "age as measured in years

is a fairly meaningless concept for the black American population with whom I worked. For

them, age does not measure years on a fixed continuum but reflects those important life events

which mature a person."

It would be a mistake, however, to presume that such indifference toward numerical age

applies to all sectors of the black elderly. While age misreporting was high, slightly more than

half of the death certificates in our sample did correctly report age. This study has uncovered

evidence that differences in contact with mainstream age-linked institutions among older blacks

may be particularly responsible for differences in age reporting outcomes. Our findings strongly

suggests the error of simple explanations that would perceive group differentials in age reporting

as primarily a function of over-arching cultural notions that exist independently from structural

relationships. Nevertheless, further research is required to determine the importance of such

institutional linkages in other data sources and among other groups.

We have found evidence that the quality of age data for elderly populations depends

critically on the existence and coverage of age-linked institutions more than a half century earlier.

Because of this time lag, we believe the prospect of rapid improvements in the quality of age

reporting appears remote. This is disquieting news, particularly for investigators interested in

developing nations; barring dramatic methodological advancements in data collection, age

19

misreporting is likely to remain a seriou s threat to the validity of age-sensitive research findings.

Social institutions have the potential to greatly influence the meanings   and salience of age. This is illustrated by the widely recognized importance in the U.S of age 65, the officia l retirement age, as the perceived threshold of old age (Chudacoff 1989). Yet age-linke d institutions need not instill such institutionalized understandings to affect age reporting. In fact, it is likely that the majority of Americans can now accurately recall their ages and the ages o   f close relatives for no more compelling reason than the fact that this information is requested so frequently in day-to-day affairs--much the same reason that many college   students can swiftly recite their Social Security numbers. Moreover, the extensive databases kept by moder   n bureaucratic organizations very likely encourage higher levels of consistency in age reporting. As an individual becomes more and more enmeshed in such institutional relationships, a paper trail inevitably develops that reduces the likelihood of age misstatement, even after death.

Notes

[1] Besides these micro-level studies, aggregate-level evidence o f substantial age error among older African Americans includes inconsistencies between intercensal changes in cohort size an d intercensal deaths (Elo and Preston 1994) and dispar ities between mortality rates estimated using vital statistics/census data and rates estimated using other data sources (Bayo 1972; Coale and Kisker 1990; Kestenbaum 1992; Zelnik 1969).

[2] Death certificate age reporting for unmatched cases did not differ significantly from that o f matched cases when compared to Social Security Administration records, a third source of age data (see Preston et al. 1995).

[3] In the small number of internally inconsistent cases mentioned above, this includes either the age reported on the death certificate or the age calculated from the date-of-birth field on the death certificate when both of these ages failed to agree with the census age.

[4] For analysis of informant relationship, we pooled together 838 census-matched records fo r which informant information was available in the Preston et al. (1995) database of Africa n American deaths. Therefore, Table 2 includes along with our sample a small number of cases from a 1980 sample of decedents putativ ely aged 60-69 as well as from an oversample of deaths putatively age 85+ in 1985. Th is augmentation of the sample did not affect findings. Exact age agreement for the 838 matched cases included in Table 2 does not differ from that of the 2152 matched cases used throughout the rest of this paper (55.6% versus 55.5%).

[5] Further analyses using logistic regression indicated that informant relationship remained a n inconsequential predictor of age accuracy when controls for age, sex and marital status wer e employed.

[6] Knodel an d Chayovan (1991) conclude that accurate age reporting in Thailand is associate d with traditional astrological practices that require precise accounting of date of birth. Coale and Li (1991) find a similar connection between astrology and high quality age reporting in China.

[7] For ex ample, Cook (1982) found in the U.S. 47 Federal government programs that use age as a criterion for eligibility, according to the Congressional Research Service.

[8] The perce nt literate among Blacks aged 10+ in the *state* of early census residence wa s substituted for several subjects who resided in counties that contained less than 100 blacks age 10+.

It is often assumed that literacy improves age reporting. However   , citing evidence of high quality age reporting in Sweden as early as 1750, Seltzer (1973:15) notes that "literacy taken by itself is neither necessary nor sufficient for accurate age reporting." Recent studies lend support for this conclusion (see, for example, Coale and Li 1991:295; Ambannvar and Visaria 1975)   . Therefore, we emphasize literacy as an in dicator of education and mainstream social interaction.

[9] Veteran status information was not available for deaths registered in Alabama, California , Florida, Kentucky, Louisiana, New York City, and Oklahoma.

[10] We use a dichotomous variable because the association between percentage black and racial interaction does not appear to be linear. For example, Kalmijn (1993) found that the percentage of blacks marrying whites during the 1980s markedly increased in states with less than 10% of the population aged 18-34 was black. This nonlinear relationship appeared to hold even fo r southern states.

[11] Occupational categor ies correspond to those used by the Bureau of the Census for the Census of 1970 (U.S. Bureau of the Census 1971).

[12] African-American baseball great Satchel Paige eluded to this p oint when he asked the question, "How old would you be if you didn't know how old you are?" (Quoted in Riley 1993:10).

[13] Of interest is the traditional African American saying, "A woman wh o will tell her own age will tell anything" (Riley 1993:9).

   Recently, feminist Gloria Steinem (1994:164) asserted that age understatement amon g American women is so widespread that if "women were to tell their real age, our idea of what 60 looks like would change overnight." On the other hand, there may be similar social incentives to exaggerate age among the oldest old (Coale 1991). News stories and publications celebrating individuals of very advanced age are common in the United States, including the Africa n

American centen arians Sarah and Elizabeth Delany (see Delany and Delany 1993). The Social

Security Administration has even published interviews with beneficiaries purported to be ag   e

100+ in celebration of their extreme longevity (Social Security Administration 1963).

References

Ambannvar, J.P., and P. Visaria. 1975. "Influence of Literacy and Education on the Quality of Age Returns." *Demography India* 4(1):11-15.

Bayo, F. 1972. "Mortality of the Aged." *Transactions of the Society of Actuaries* 24:1-24.

Berger, Peter L., and Thomas Luckman. 1967. *The Social Construction of Reality: A Treatise in the Sociology of Knowledge*. Garden City, NY: Doubleday.

Bytheway, Bill. 1990. "Age." In Sheila M. Peace, ed., *Researching Social Gerontology: Concepts, Methods and Issues*. London: Sage, pp. 9-18.

Chudacoff, Howard P., 1989. *How Old Are You? Age Consciousness in American Culture*. Princeton, NJ: Princeton University Press.

Clark, Kenneth B., 1965. *Dark Ghetto: Dilemmas of Social Power*. New York: Harper and Row.

Clarke, Averil, Mark E. Hill and Cathleen Riddley. 1995. "Conceptions of Age and Age Accuracy among Elderly African Americans: An Ethnographic Inquiry." Population Aging Research Center Working Paper 95-6. University of Pennsylvania.

Coale, Ansley J., 1991. "People over Age 100: Fewer than We Think." *Population Today* 19(9):6-8.

Coale, Ansley J., and Ellen Kisker. 1986. "Mortality Crossovers: Reality or Bad Data?" *Population Studies* 40:389-401.

_____. 1990. "Defects in Data on Old-Age Mortality in the United States: New Procedures for Calculating Mortality Schedules and Life Tables at the Highest Ages." *Asian and Pacific Population Forum* 4(1):1-31.

Coale, Ansley J., and Shaomin Li. 1991. "The Effect of Age Misreporting in China on the Calculation of Mortality Rates at Very High Ages." *Demography* 28(2): 293-301.

Cook, Fay Lomax. 1982. "Assessing Age as an Eligibility Criterion." In Bernice L. Neugarten, ed., *Age or Need? Public Policies for Older People*. Beverly Hills: Sage, pp. 171-204.

Delany, Sarah L., and A. Elizabeth Delany. 1993. *Having Our Say: The Delany Sisters' First 100 Years*. New York: Kodansha International.

Deutch, Jacob. 1973. "Proof of Age Policies--Past, Present and Future: Selected EMS Data." Unpublished memorandum by the Evaluation and Measurement System Staff, ORS, to Assistant Bureau Director, Program Policy, BRSI. U.S. Department of Health, Education, Welfare; Washington, DC.

Elo, Irma T. and Samuel H. Preston. 1994. "Estimating African-American Mortality from Inaccurate Data." *Demography* 31(3): 427-458.

Elo, Irma T., Samuel H. Preston, Ira Rosenwaike, Mark Hill, and Timothy Cheney. 1995. "Consistency of Age Reporting on Death Certificates and Social Security Administration Records among Elderly African-American Decedents." Population Aging Research Center Working Paper 95-3. University of Pennsylvania.

Ewbank, Douglas C. 1981. *Age Misreporting and Age-Selective Underenumeration: Sources, Patterns, and Consequences for Demographic Analysis*. Washington, DC: National Academy Press.

Farley, Reynolds and Walter R. Allen. 1987. *The Color Line and the Quality of Life in America*. New York: Russell Sage Foundation.

Fortes, Meyer. 1984. "Age, Generation and Social Structure." In D. Kertzer and J. Keith, eds., *Age and Anthropological Theory*. Ithaca, NY: Cornell University Press, pp. 99-122.

Grossman, James R. 1989. *Land of Hope: Chicago, Black Southerners, and the Great Migration*. Chicago: University of Chicago Press.

Hambright, Thea Z. 1969. "Comparison of Information on Death Certificates and Matching 1960 Census Records: Age, Marital Status, Race, Nativity and Country of Origin." *Demography* 6:413-23.

Harris, Mary B. 1994. "Growing Old Gracefully: Age Concealment and Gender." *Journal of Gerontology* 49(4):149-158.

Jackson, Linda A. 1992. *Physical Appearance and Gender: Sociobiological and Sociocultural Perspectives*. Albany, NY: State University of New York Press.

Kalmijn, Matthijs. 1993. "Trends in Black/White Intermarriage." *Social Forces* 72(1): 119-146.

Keith, Jennie. 1990. "Age in Social and Cultural Context: Anthropological Perspectives." In Robert H. Binstock and Linda K. George, eds., *Handbook of Aging and the Social Sciences*, 3rd ed. San Diego: Academic Press, pp. 91-111.

Kestenbaum, Bert. 1992. "A Description of the Extreme Aged Population Based on improved Medicare Enrollment Data." *Demography* 29(3): 565-80.

Knodel, John, and Napaporn Chayovan. 1991. "Age and Birth Date Reporting in Thailand." *Asian and Pacific Population Forum* 5(2-3):41-76.

Krishnamoorthy, S. and A. Muthiah. 1985. "Age." In D. Lucas and P. Kane eds., *Asking Demographic Questions*. Canberra: Australian National University.

Mason, Karen Oppenheim, and Lisa G. Cope. 1987. "Sources of Age and Date-of-Birth Misreporting in the 1900 U.S. Census." *Demography* 24(4): 563-73.

Massey, Douglas S. and Nancy A. Denton. 1992. *American Apartheid: Segregation and the Making of the Underclass*. Cambridge, MA: Harvard University Press

Mayer, Karl U. and W. Muller. 1986. "The State and the Structure of the Life Course." In A.B. Sorensen, F.W. Weinert, and L.R. Sherrod, eds., *Human Development and the Life Course: Multidisciplinary Perspectives*. Hillsdale, NJ: Erlbaum.

National Center for Health Statistics. 1968. *Comparability of Age on the Death Certificate and Matching Census Record, United States, May-August 1960*. Vital and Health Statistics, Series 2, No. 29. Washington, DC: Government Printing Office.

_____. 1987. *Physicians' Handbook on Medical Certification of Death*. Washington, DC: Government Printing Office.

Nielsen, Joyce M. 1990. *Sex and Gender in Society: Perspectives on Stratification*, 2nd ed. Prospect Heights, IL: Waveland Press.

Peterson, Jane W. 1990. "Age of Wisdom: Elderly Black Women in Family and Church." In Jay Sokolovsky, ed., *The Cultural Context of Aging*. New York: Bergin & Garvey Publishers. pp. 213-228.

Preston, Samuel H., Irma T. Elo, Ira Rosenwaike, Mark Hill. 1995. "African American Mortality at Older Ages: Results of a Matching Study." Presented at the annual meeting of the Population Association of America, San Francisco; April 1995.

Quadagno, Jill. 1994. *The Color of Welfare: How Racism Undermined the War on Poverty*. New York: Oxford University Press.

Richmond-Abbott, Marie. 1992. *Masculine and Feminine: Gender Roles over the Life Cycle*. 2nd ed. New York: McGraw-Hill.

Riley, Dorothy Winbush. 1993. *My Soul Looks Back, 'Less I Forget: A Collection of Quotations by People of Color*. New York: Harper Collins.

Rodgers, Willard L. and A. Regula Herzog. 1992. "Collecting Data about the Oldest Old: Problems and Procedures." In Richard M. Suzman, David P. Willis, and Kenneth G. Manton, eds., *The Oldest Old*. New York: Oxford University Press, pp. 135-156.

Rosenwaike, Ira and Barbara Logue. 1983. "Accuracy of Death Certificate Ages for the Extreme Aged." *Demography* 20(4):569-585.

Saxena, Prem C., Ravi K. Verma and Arun K. Sharma. 1986. "Errors in Age-Reporting in India: A Socio-Cultural and Psychological Explanation." *The Indian Journal of Social Work* 47(2):127-135.

Seltzer, William. 1973. *Demographic Data Collection: A Summary of Experience*. New York: Population Council.

Shapiro, Sam. 1950. "Development of Birth Registration and Birth Statistics in the United States." *Population Studies* 4:86-111.

Social Security Administration. 1963. *America's Centenarian--Reports of Interviews with Social Security Beneficiaries Who Have Lived to 100*. Washington, DC: Government Printing Office.

_____. 1977. *Report on Policies and Procedures for Establishing Initial Entitlement to RSDI Benefits*. Evaluation and Measurement System, Series 1, No. 37-40. Washington, DC: Government Printing Office.

Steinem, Gloria. 1994. "Doing Sixty: If All Women Were to Tell their Real Age, Our Idea of What 60 Looks Like Would Change Overnight." *Family Circle*. Vol. 107 (July 19, 1994) 164.

Sudman, Seymour and Norman M. Bradburn. 1982. *Asking Questions: A Practical Guide to Questionnaire Design*. San Francisco: Jossey-Bass Publishers.

U.S. Bureau of the Census. 1913. *Negroes in the United States*. Bulletin 129. Washington,DC: Government Printing Office.

_____. 1935. *Negroes in the United States: 1920-32*. Washington, DC: Government Printing Office.

_____. 1969. *Changing Characteristics of the Negro Population*. Washington, DC: Government Printing Office.

_____. 1971. *1970 Census of Population Alphabetical Index of Industries and Occupations*. Washington, DC: Government Printing Office.

_____. 1983. *County and City Data Book*. Washington, DC: Government Printing Office.

Zelnik, Melvin. 1969. "Age Patterns of Mortality of American Negroes 1900-02 to 1959-61." *Journal of the American Statistical Association* 64(326):433-51.

TABLE 1: Percent of Sampled Decedents Successfully Linked to an
          Early-life Census Record by Death Certificate Age

)))

Age on Death
Certificate   Number   Percent Matched
)))

  65-69   788   52.4
  70-74   812   54.8
  75-79   716   56.8
  80-84   724   57.7
  85-89   389   62.0
  90-94   215   71.6
  95-99   87   64.4
   100+   29   65.5

  Total   3760   57.3
)))

TABLE 2:   Exact Age Agreement and Age Agreement within One Year
           of Age by Informant Relationship, Expressed in
           Percentages: Matched Death Certificates and Census
           Records

))

Informant Relationship	Exact Agreement	Within One Year	N
Spouse	53.8	79.4	199
Sibling	56.1	72.0	107
Adult Child	54.1	76.2	290
Other Relative	61.1	75.2	113
Friend or In-Law	57.1	82.1	28
Medical Record or Official Source[1]	56.4	76.2	101
Total	55.6	76.5	838

))

[1] Information taken from medical records or provided by a persons operating in an
official capacity (e.g., nursing home staff member, social worker).

TABLE 3: Distribution of Age Differences on Death Certificates and Early Census Records by Five-Year Age Groups, Expressed in Percentages: National Sample of African Americans Aged 65+ at Death in 1985

))

Death Certificate Age Minus Census Age

True Age Group	<=-5	-2 to -4	-1	0[1]	1	2 to 4	5+	N
65-69[2]	---	4.6	9.7	76.0	5.1	1.7	3.0	237
70-74	4.3	11.8	12.5	57.2	8.2	4.3	1.6	304
75-79	7.4	12.4	16.1	51.2	7.4	4.4	1.3	299
80-84	11.2	12.9	14.6	46.3	9.9	3.7	1.7	294
85-89	11.4	18.0	11.8	43.9	5.7	5.7	4.0	228
90-94	15.8	11.3	5.3	39.9	13.5	9.0	5.3	133
95-99	18.2	9.1	12.1	39.4	6.1	9.1	6.1	33
100+	0.0	12.5	0.0	25.0	25.0	12.5	25.0	8
Total	7.9	11.9	12.4	52.8	8.0	4.5	2.6	1891

))

Does not include records from the Maryland-born oversample. --- Impossible result due to truncation. See text for explanation. [1] Allows for one year overstatement of census age when a birthday is anticipated. See text for explanation. [2] Results for the 65-69 age group should be interpreted with caution due to truncation; see text for explanation.

TABLE 4: Gross Errors in Reported Ages at Death by Sex, Expressed in Percentages: African
          Americans Aged 65+ at Death in 1985

))

| | TOTAL | | | | FEMALES | | | | MALES | | | |
True Age Group	Valid	Under-stated	Over-stated	N	Valid	Under-stated	Over-stated	N	Valid	Under-stated	Over-stated	N
65-69[1]	76.4	13.8	9.8	364	74.9	16.0	9.1	148	77.2	12.5	10.2	216
70-74	57.1	28.6	14.3	426	52.7	34.0	13.2	187	60.7	24.1	15.3	239
75-79	51.5	35.5	13.0	408	49.8	39.6	10.6	191	53.0	32.0	15.0	217
80-84	45.4	39.4	15.2	397	43.9	44.7	11.4	207	47.0	33.8	19.3	190
85-89	43.6	41.1	15.2	304	39.3	45.8	14.9	180	50.1	34.2	15.8	124
90-94	39.2	32.7	28.1	184	35.5	43.2	21.3	120	46.0	13.2	40.8	64
95+	33.9	35.7	30.4	69	30.3	36.7	33.1	44	41.9	33.6	24.5	25
Total	52.6	32.1	15.3	2152	47.9	38.3	13.8	1077	57.3	26.0	16.7	1075

))

All percentages are weighted to correct for oversample of Maryland-born subjects; N indicates
number of unweighted cases. Figures may not sum to 100 due to rounding. [1] Results for the 65-
69 age group should be interpreted with caution due to truncation; see text for explanation.

TABLE 5:   Mean Error in Years in Reported Ages at Death by Sex:
           African Americans Aged 70+ at Death in 1985

)))

| True Age | TOTAL | | FEMALES | | MALES | |
| Group | Mean | N | Mean | N | Mean | N |
)))
70-74	-0.31	426	-0.40	187	-0.24	239
75-79	-0.68	408	-1.08	191	-0.34	217
80-84	-1.06	397	-1.45	207	-0.64	190
85-89	-1.07	304	-1.32	180	-0.68	124
90-94	-1.07	184	-1.84	120	+0.37	64
95-99	-0.85	56	-1.27	38	+0.16	18
100+	+4.25	13	+3.31	6	+5.72	7
Total	-0.76	1788	-1.15	929	-0.34	859
Age-Adjusted Mean[1]			-1.09		-0.31	

)))

Positive values indicate mean age exaggeration; negative values
indicate mean age understatement. Means were weighted to correct for
oversample of Maryland-born subjects; N indicates number of
unweighted cases. [1] Adjusted to the total five-year age distribution.

35

TABLE 6: Percent of Death Certificates Accurately Reporting Age by
          Selected Characteristics: African American Decedents Aged
          65+
)))

Characteristic	% Valid	N
Total	52.6	2152
Maryland-Born	62.7[1]	651
Sex		
Females	47.9	1077
Males	57.3	1075
Marital Status		
Married	56.8	748
Widowed	47.3	1061
Other[2]	60.5	343
Migrant Status		
Migrants from the South	55.9	613
Southern-Born Nonmigrants	48.7	1423
Born outside of South	70.4	116
Usual Occupation		
White Collar Workers[3]	56.6	178
Craftsmen/Operatives	58.2	285
Service Workers[4]	49.6	865
Laborers	56.4	338
Farm/Farm Laborers	40.8	144
Not Reported	57.0	342
Last Residence		
In MSA	53.6	1662
Not in MSA	49.9	490
Pop. of Early Census County		
<10% Black in 1910	70.3	199
>=10% Black in 1910	50.3	1953
Literacy of Blacks Age 10+		
in Early Census County[5]		
<74.7% in 1920	47.1	886
>=74.7% in 1920	58.2	1266
Birth Registration Coverage[5]		
<17.4%	48.3	859
>=17.4+%	57.8	1293
Veteran Status[6]		
Veterans	68.7	238
Non-Veterans	51.4	614
Not Reported	60.7	223

)))
See text for description of variables. Percentages weighted to correct for oversample
of Maryland-born subjects; N indicates number of unweighted cases.
[1] Unweighted. [2] Married, divorced, and unknown. [3] Professional, managerial, sales, and
clerical workers. [4] Includes women classified as housewife/homemaker.

TABLE 7: Logistic Regression Coefficients and Odds Ratios for
          Model Predicting Accurate Death Certificate Age
          Reporting: African Americans Aged 65+

Independent Variable	Coefficient	Odds Ratio
True Age	-.05083***	0.950
Sex		
Female	---	
Male	.38107***	1.464
Marital Status		
Married	---	
Widowed	.05506	1.057
Other[1]	.00767	1.008
Migrant Status		
Southern Nonmigrant	---	
Southern Migrant	.26632**	1.305
Born Outside of South	-.61390*	0.541
Occupational Status		
Farmer/Farm Laborer	---	
White Collar[2]	.51427**	1.672
Craftsman/Operative	.28042	1.324
Service/Domestic[3]	.44729**	1.564
Laborer	.24363	1.276
Not Reported	.51135**	1.668
Last Residence		
Not in MSA	---	
In MSA	-.19731	0.821
Percent Literate in Census County in 1920	.01337**	1.013
Percent of Census County Population Black in 1910		
>10%	---	
0-10%	.55863**	1.748
Birth Registration Coverage	.01472***	1.015
Born in Maryland		
No	---	
Yes	-.13075	0.877
Truncation Control	.04233	1.043
Constant	2.26383***	
Sample Size		2152
Chi^2(17)		197.4
Pseudo R^2		0.0668

--- Reference Category. * Significant at P <.1; ** Significant at P <.05; *** Significant at P < .01. See
text for description of variables.
[1] Never married, divorced, and unknown. [2] Professional, managerial, sales, and clerical workers. [3] Includes
housewives/homemakers.