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## Keywords

African Americans, age reporting, Social Security Administration, death certificates

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***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 age inconsistencies for African Americans. Of the linked 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 for blacks reported to be aged 65+ to early-life census records for the same individuals. This paper has two objectives: (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 age reporting accuracy based on the premise that age knowledge is strongly conditioned by institutional factors (Chudacoff 1989; Fortes 1984). The biasing effect of age misstatement on observed black mortality rates has been addressed elsewhere (see Preston et al. 1995).

## Data and Methods

### *The Death Certificate Database and Record Linkage*

The database employed in this study is a subsample of that used by Preston et al. (1995) to produce corrected mortality rates for elderly African Americans. 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

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 accomplished using locator forms containing pertinent linkage information for each decedent. Linkage relied heavily on microfilm copies of Soundex index records, which catalog household heads and unrelated individuals using a phonetic coding system. Soundex records are organized by state of residence and then alphabetically by surname of the household head or unrelated individual. These records list the household's place of 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 month 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 the 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 death 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 those 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

distort age validation findings at the youngest ages; because only death certificates with ages 65+ were selected, persons whose true 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 may understate age reporting errors and should be interpreted with caution. In our multivariate 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 1900 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 death certificate to calculate age at death.

The validity of death certificate age was assessed through comparison with the census-based age at death. Throughout this paper we refer to the death certificate age as valid/accurate (misreported/inaccurate) 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, complications arose when the age reported on the death certificate was internally inconsistent with the date of birth reported on the same certificate. 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 all sampled death records had to list an age at death in accordance with our selection protocol, 19

lacked the date-of-birth information necessary to allow calculation of age at death.) We dealt with such inconsistencies by judging death certificate ages to be valid if the census-based age agreed with either the stated age or the implied age at 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 be 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 followed 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, funeral directors are responsible for completing all personal information on the death certificate, including age (NCHS 1987). Typically, they collect this information from relatives of the deceased. The literature on data collection using proxy informants suggests that close relatives (e.g., spouses and adult children) generally provide the most accurate proxy 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 death certificates in the following registration areas where this information was available: California, Colorado, District of Columbia, Georgia, Illinois, Massachusetts, New York City, and North

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 exhibited the lowest levels of exact age agreement, although differences 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%); nevertheless, differences remained small and statistically insignificant.[5] Age information was 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-reported, 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 death certificate age reporting. These findings suggest that the principal source of death certificate age misreporting among older African Americans is imprecise age accounting on the part of decedents themselves.

## Theoretical Considerations

### *Age Relevance and Age-linked Social Institutions*

While the quality of age reporting appears to be relatively good in several developing 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 and

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,

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 1950s (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 and participation were operationalized. We expected each index to be positively associated with age accuracy.

Literacy. Our measure of literacy is the percentage of blacks aged 10+ reported in the 1920 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 attending 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, school 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 Security Administration (1977). It provides an estimate of the percentage of civil birth records available by state of birth for retirement and survivors benefit claimants whose claims were adjudicated in 1973 and 1974. We coded this information by the state of birth listed in the linked census record. The production and storage of official records is paramount where social privileges and responsibilities depend on strict age criteria (Bytheway 1990; Fortes 1984).

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

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 early census records) but resided elsewhere at time of death (according 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 migrants were qualitatively different from southern nonmigrants in terms of their mainstream 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 to reduce age misreporting, we did not expect errors to be random in direction. The drive to 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 clear preference for appearing young, and as they age many employ techniques of age concealment--including deliberate age understatement--in hopes of being perceived by others as more youthful (Harris 1994). A recent study (Clarke, Hill, and Riddley 1995) found such concerns to be important to African-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-known

phenomenon of age exaggeration among Americans putatively aged 100 and above (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 to "choose" their own age, such directional biases would not be inconsistent 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 men (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 presents 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 52.8% of matched cases had the age at death on the death certificate that would be expected from the census record. Ages on matched records disagreed by two or more years for 26.9% of the decedents; 10.5% had ages at death that differed by five 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 least 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

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 substantially 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 agreement ($e^{(.01337)*10}$). Persons raised in counties with 0-10% of the total population reported as black in the 1910 census exhibited substantially better odds of age agreement than those in disproportionately black counties (odds ratio of 1.75). Finally, birth registration coverage exhibited a powerful association with age agreement; results suggest a 10% increase in birth registration coverage increased the odds of age agreement by a factor of 1.158 ($e^{(.01472*10)}$). Of our indices of mainstream institutional interaction, only metropolitan residence at the time of death failed to be a statistically 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 is consistent with the absence of better accuracy for spousal informants shown in Table 2.

Other multivariate findings presented in Table 7 are of interest. The pronounced gender patterns found in Tables 4 through 6 persisted 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 else

constant, persons born more recently had greater access to pubic education and other modern age-linked institutions. Nevertheless, 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 because Maryland was the first southern state admitted to the Birth Registration Area (in 1916) (Shapiro 1950) and consequently has been found to have better 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 certificate 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 national sample (Table 3). Further analysis indicated that greater age accuracy among Maryland-born cases persisted within all five-year age groups. When institutional factors were considered, however, age agreement among Maryland-born persons was no longer significantly different (Table 7). This finding suggests that higher levels of age 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 black populations.

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

veterans had 1.44 greater odds 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 not statistically significant.

**Discussion**

This paper has described levels of age misreporting and investigated potential determinants of age accuracy for older African 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 representative sample of native-born black decedents aged 65+ had ages reported on their death certificates that were consistent with those reported on census records 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 potentially confounding factors were controlled (odds ratio of 1.46).

More surprising was the unanticipated finding that informant relationship had little 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 by degrees of familiarity: "It provides complex and detailed information concerning those sectors of everyday life with which I must frequently deal. It provides much more general and imprecise information on remoter sections." Despite our expectation that close relatives would maintain the largest stock of knowledge concerning decedents, the age data provided by spouses, siblings, and adult children were no more accurate than that supplied by more distant relations. The

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

misreporting is likely to remain a serious 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 official retirement age, as the perceived threshold of old age (Chudacoff 1989). Yet age-linked 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 of 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 modern 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 of substantial age error among older African Americans includes inconsistencies between intercensal changes in cohort size and intercensal deaths (Elo and Preston 1994) and disparities 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 of 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 for which informant information was available in the Preston et al. (1995) database of African American deaths. Therefore, Table 2 includes along with our sample a small number of cases from a 1980 sample of decedents putatively aged 60-69 as well as from an oversample of deaths putatively age 85+ in 1985. This 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 an inconsequential predictor of age accuracy when controls for age, sex and marital status were employed.

[6] Knodel and Chayovan (1991) conclude that accurate age reporting in Thailand is associated 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 example, 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 percent literate among Blacks aged 10+ in the *state* of early census residence was 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 indicator 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 for southern states.

[11] Occupational categories 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 point 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 who will tell her own age will tell anything" (Riley 1993:9).

Recently, feminist Gloria Steinem (1994:164) asserted that age understatement among 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 African

American centenarians Sarah and Elizabeth Delany (see Delany and Delany 1993). The Social Security Administration has even published interviews with beneficiaries purported to be age 100+ in celebration of their extreme longevity (Social Security Administration 1963).

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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

| True Age Group | Death Certificate Age Minus Census Age | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | <=-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

| True Age Group | TOTAL Valid | TOTAL Under-stated | TOTAL Over-stated | TOTAL N | FEMALES Valid | FEMALES Under-stated | FEMALES Over-stated | FEMALES N | MALES Valid | MALES Under-stated | MALES Over-stated | MALES 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 Group | TOTAL Mean | TOTAL N | FEMALES Mean | FEMALES N | MALES Mean | MALES 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.

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.

[5] Continuous variable grouped into high and low intervals at the median for matches in the national sample. [6] As reported on Death Certificate for males only; Men dying in registration areas that did not collect these data are classed as not reported.

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.