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HEALTHIER, WEALTHIER, AND WISER: A DEMONSTRATION OF COMPOSITIONAL CHANGES IN AGING COHORTS DUE TO SELECTIVE MORTALITY

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Abstract

The gradual changes in cohort composition that occur as a result of selective mortality processes are of interest to all aging research. We present the first illustration of changes in the distribution of specific cohort characteristics that arise purely as a result of selective mortality. We use data on health, wealth, education, and other covariates from two cohorts (the AHEAD cohort, born 1900–23 and the HRS cohort, born 1931–41) included in the Health and Retirement Survey, a nationally representative panel study of older Americans spanning nearly two decades (N=14,466). We calculate sample statistics for the surviving cohort at each wave. Repeatedly using only baseline information for these calculations so that there are no changes at the individual level (what changes is the set of surviving respondents at each specific wave), we obtain a demonstration of the impact of mortality selection on the cohort characteristics. We find substantial changes in the distribution of all examined characteristics across the nine survey waves. For instance, the median wealth increases from about \$90,000 to \$130,000 and the number of chronic conditions declines from 1.5 to 1 in the AHEAD cohort. We discuss factors that influence the rate of change in various characteristics. The mortality selection process changes the composition of older cohorts considerably, such that researchers focusing on the oldest old need to be aware of the highly select groups they are observing, and interpret their conclusions accordingly.

Keywords

Mortality selection; cohorts; aging; cohort composition

Selective mortality is a process whereby disadvantaged individuals die at younger ages than their more advantaged peers. This process gradually changes the composition of cohorts in a systematic way: the cohorts appear healthier, wealthier, more educated, and generally better off than they would in the absence of the selection process -- that is, if the more disadvantaged individuals did not die early. Changes in cohort composition over time

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resulting from selective mortality are relevant to a wide range of substantive research questions, particularly those focused on older adults or the aging process. Interestingly, while it is widely recognized that the composition of aging cohorts changes due to selective mortality, the patterns of such changes have never been published. Below, we briefly review the literature on mortality selection and present new findings that illustrate how the selection process changes key cohort characteristics like health, wealth, and education.

Over the past three decades, demographers have provided the theoretical and mathematical foundations to understanding the mortality selection process and its impact on aging cohorts (Keyfitz, 1985; Manton, 1999; Trussell & Richards, 1985; Trussell & Rodriguez, 1990; Vaupel, 1988; Vaupel, Manton, & Stallard, 1979; Vaupel & Yashin, 1985). The mortality selection process removes individuals from the disadvantaged ‘tail’ of the cohort distribution, which changes both the centers (means, medians) of distributions of many characteristics toward more advantageous levels, and also decreases the variance of these distributions (i.e., Vaupel & Zhang, 2010). In formal demography this work originally aimed to disentangle individual mortality hazards from average cohort mortality experiences: the average mortality hazard increases with age, but more slowly than the individual mortality hazards (Vaupel et al., 1979; Vaupel & Yashin, 1985).

In other fields, the findings regarding selective mortality were applied to various other research problems. For example, health tends to decline with age at the individual level, but the average health in a cohort can remain stable or possibly even improve as those who are the sickest die out, leaving a more robust group behind (Lynch, 2003). Two particularly important areas where mortality selection has played a role pertain to racial crossovers and the lifecourse patterns of socioeconomic inequalities in health. Studies of racial differences in health and mortality among the oldest old turned up evidence of racial crossovers, whereby the average health and longevity in cohorts of older black adults appeared to gradually approximate or even exceed those of white adults (Coale & Kisker, 1986; Dupre, Franzese, & Parrado, 2006; Johnson, 2000; Manton, Poss, & Wing, 1979; Masters, 2012). In sociology and social epidemiology, the study of lifecourse patterns of health inequalities needed to reconcile two opposing perspectives: “cumulative inequality,” which posits that disparities continue to widen with age, versus “age-as-leveler,” which suggests that disparities become smaller in old age. At the population level, the disparities indeed appear to decline at older ages (House et al., 1990; House et al., 1994). At the individual level, theory and some empirical evidence indicates continued growth of the disparities (Dupre, 2008; Lauderdale, 2001; Lynch, 2003; Mirowsky & Ross, 2008). In both bodies of literature, the inconsistencies between the theorized individual-level patterns and observed average cohort patterns can be explained by selective mortality that removes more frail individuals from the socially disadvantaged groups, so that the advantaged and disadvantaged averages gradually become more similar although there is no such convergence at the individual level (DiPrete & Eirich, 2006; Dupre, 2008; Ferraro & Farmer, 1996; Ferraro, Shippee, & Schafer, 2009; Willson, Shuey, & Elder, 2007; Zajacova, Goldman, & Rodriguez, 2009).

Mortality selection processes clearly have major consequences for research in many aging-related fields because the surviving cohorts differ from the original cohorts, and, perhaps

even more importantly, the changes over time at the cohort level differ from changes at the individual level. Researchers in many disciplines have discussed the selection process and its effects but a critical gap remains. On one hand, formal demography provided the understanding of the mathematical relationships that drive the selection process. On the other hand, the consequences of the selection process have been used to explain *associations* between characteristics in cohorts, like between race and health in the racial crossovers literature, or education and health in the age-as-leveler versus cumulative inequality literature. To the best of our knowledge, however, no study has described how the distribution of *specific cohort characteristics* such as health, wealth, education, or demographic characteristics change as a result of selective mortality. This is a problematic gap because we should understand the changes that occur in the basic building blocks of our analyses before we study associations between such variables.

In the current study, we present a straightforward but novel illustration of changes in the distribution of important cohort characteristics that arise purely as a result of selective mortality in nationally-representative cohorts of older adults who were followed for up to 16 years. We focus on measures of health, wealth, and education, three factors central to aging research (Adams, Hurd, McFadden, Merrill, & Ribeiro, 2004; Elo & Drevenstedt, 2002; Elo, Martikainen, & Smith, 2006; Montez, Hummer, & Hayward, 2012; Zajacova & Hummer, 2009). We also show systematic changes in basic demographic and health-related characteristics of the cohort, specifically sex, race, marital status, as well as smoking and self-rated health. To isolate the consequences of mortality selection, we only use information about cohort characteristics as reported at the baseline -- thus we eliminate the influence of any actual changes individuals are experiencing over time in these characteristics (e.g., their health changing over time). We calculate the distributions of these baseline measures for surviving individuals at each wave. As individuals gradually die, the distributions of the characteristics will change for the surviving cohort. We examine the changes in two cohorts, the HRS cohort with adults averaging about 58 years at the baseline and the AHEAD cohort with adults about 20 years older than HRS respondents. These two cohorts differ widely in the rate of mortality selection (among other factors discussed below), with the older cohort experiencing a much faster selection process. We can therefore compare the rate of cohort composition changes occurring in different characteristics across two generations of American adults and elderly.

DATA AND METHOD

Data Source

The analyses are based on data from the Health and Retirement Survey (HRS) (Hodes & Suzman, 2007; Juster & Suzman, 1995). The HRS is a nationally representative panel study of older Americans, with interviews conducted every 2 years by the Institute for Social Research at the University of Michigan. The original HRS cohort study started in 1992 and included adults born between 1931 and 1941. During the second wave of interviews in 1994, the survey was joined by the Asset and Health Dynamics Among the Oldest Old (AHEAD) panel that comprised adults born before 1924. Because the 1994 wave is the first wave when

both the HRS and AHEAD cohorts are present, we define the 1994 interview as the baseline in our analyses.

We use a version of the merged HRS-AHEAD data available from the RAND Corporation (RAND Corp., 2011). We utilize all 9 waves in which both HRS and AHEAD respondents have been interviewed, from 1994 to 2010. Our analysis sample is defined as respondents with nonzero sampling weights at the 1994 interview from the AHEAD and HRS cohorts who either survived to be interviewed in 2010 or were known to have died at some point. This definition excludes respondents who attrited from the sample but were believed to be alive because the analysis focuses on selective mortality attrition, not attrition due to other causes. We briefly comment on results that include attriters below. The sample used in the analyses includes 14,466 individuals.

Measures

We used only information that was self-reported at the 1994 interview for all cohort characteristics except mortality tracking, where we used information from every wave of the survey. The primary measure of health was the number of chronic conditions. The conditions included diabetes, cancer, hypertension, lung disease, 'other' heart problem, stroke, psychological problems, and arthritis; the summed index ranged from 0 to 8 conditions. Wealth captured the value of total household assets including primary residence minus any debt or mortgage. We analyzed wealth as continuous and used the median as the measure of center, due to the highly skewed distribution of this variable. Education was measured in completed years from 0 to 17; the highest attainment level included all respondents with any post-baccalaureate schooling. We used this measure as continuous in some analyses, and also categorized it for descriptive analyses as less than high school, high school diploma or some college, and bachelor's degree or more.

Demographic information included year of birth, gender, race (white, black, and other), and marital status (which we dichotomized as married versus not married). Smoking status was coded as current smoker, former smoker, and never smoker. Finally, self-rated health was ascertained on a 5-point scale from excellent to poor; we categorized it into three levels (excellent or very good, good, fair or poor) for descriptive statistics and also dichotomized it as fair/poor versus good to excellent.

The HRS provided an ongoing tracking of all participants' vital status. At each wave, vital status was ascertained for all nonrespondents by the HRS staff by gathering information from spouses, relatives, or neighbors of the respondent. The nonrespondents were classified as alive or presumed alive versus dead or presumed dead; all respondents who participated at a given interview were by definition alive at that wave. We used this wave-specific information to define the surviving sample at each wave. In addition to this wave-specific vital status information, we summarized the vital status as those who were alive and remained in the survey in the last 2010 wave, those who died at some point during the follow up. As we mentioned above, since the focus on the present study is on mortality attrition, we excluded other attriters – respondents who stopped participating but did not die. This other attriter group comprised 5.6% of the total original AHEAD sample and 15.3% of the HRS sample. We briefly discuss findings that include this group in the Results section.

Approach

Our approach to determining the changes in cohort characteristics due to mortality attrition is unique but very simple. We used information on the selected characteristics as they were reported in 1994. We calculated appropriate sample statistics (means, medians, proportions, and variance). We calculated the sample statistics for each wave, always using only the 1994 baseline information but including in the calculation only respondents who remained in the sample at the give wave. We used the 1994 information regardless of whether the characteristics could change over time and was collected at every wave (like wealth or the number of health conditions) or not (like gender or race). This straightforward descriptive approach isolated the impact of mortality selection from any other influences: any changes in the characteristics over time were only due to the selective dying out of individuals from the original cohort.

The wave-specific statistics were graphed against time using line plots, which show how the baseline characteristics of the surviving cohort change across the 9 waves of the survey from 1994 to 2010. Since we plotted values only as they were reported in 1994, if no attrition occurred the lines would be perfectly horizontal; if the attrition were random or unrelated to the key covariates, the lines would be approximately horizontal. Any departure from the horizontal pattern is a consequence of selective mortality.

Sensitivity analyses were conducted to determine the robustness of the findings to three analytic choices. First, we examined the impact of survey weights by comparing results under three scenarios: unweighted results, results obtained when applying the baseline weight at each survey wave, and results obtained when wave-specific weights were applied. These wave-specific weights were calculated by the HRS to match the sample to the Current Population Survey distributions for the given year. There was effectively no difference in substantive findings based on the two choices for sampling weights. The weighted and unweighted findings differed in the initial distribution of each characteristic but the rate of change over time, the main factor of substantive interest, was comparable for the weighted and unweighted estimates.

Second, some respondents were not interviewed in some waves but were later interviewed again – they may have missed interviews because they were out of the country, for instance, or could not be reached that year for other reasons. We could either leave these respondents out for the missed waves when calculating the sample distributions (since they failed to participate during that wave) or we could add them to the calculations (since we knew they did not attrit or die). In other words, the sample could be summarized with or without these missing interviews. Again, there was little substantive difference in findings whether or not we included respondents who missed an interview but were interviewed in a subsequent wave; all results are available on request. And finally, as we mentioned above, we compared results with and without the inclusion of respondents who left the study but were either known to be alive based on the HRS tracking information, or whose vital status was unknown – in other words, respondents whose attrition could not be definitively attributed to mortality. The results including attriters were visually nearly indistinguishable from those excluding attriters that are presented below. All figures and statistics from these sensitivity analyses are available on request.

RESULTS

Table 1 summarizes the characteristics of the AHEAD and HRS cohorts at the 1994 interview, vital status through the last available wave (2010), and the number of respondents at each interview wave. The respondents from the AHEAD cohort were born on average in 1916, about 40% were men, 87% were white, their median household wealth was \$91,000, and they reported 1.5 health conditions at the start of the survey. The HRS cohort was 20 years younger on average, about 47% were men, 82% were white, they had a higher median household wealth of over \$123,000 and a smaller number of health conditions (1.2) at the 1994 interview.

Figure 1 shows how means, medians, and variance of health, wealth, and education distributions change over time due to selective mortality. If no mortality occurred or if the mortality attrition were random, all lines in the plots would remain horizontal because we are repeatedly summarizing the 1994 characteristics at each wave. A different way to think about this is that the ‘individual trajectories’ are necessarily flat because we simply repeat the 1994 information for each individual. At the cohort level, in contrast, the characteristics change in a consistent way, with the centers of distributions shifting toward more ‘advantaged’ levels: the average number of health conditions as reported in 1994 declines, median wealth increases, and the average educational attainment also grows. For all three characteristics, the variance decreases steadily. The rate of change in both the measures of central tendency and in variance is considerably faster in the older AHEAD cohort than in the HRS cohort. This difference is primarily a function of the greater mortality attrition of the AHEAD respondents, among whom fewer than 16% of the initial cohort remained in the study through 2010, compared to over 72% in the HRS cohort.

In absolute size, the changes in the distributions of these characteristics in the surviving cohorts are substantial. For instance, the AHEAD cohort averaged about 1.5 health conditions in 1994; this mean declines to less than one condition by 2010. For the HRS cohort, the initial mean of 1.2 conditions decreases to about 1 over the same period. In fact, a crossover is evident for this characteristic, whereby by 2008 the mean number of health conditions of the older AHEAD cohort is lower than the mean of the younger HRS cohort, based on measures of these characteristics at baseline. The median baseline household wealth appears to increase steeply by 45%, from about \$90,000 to over \$130,000 for the AHEAD cohort. The observed mean educational attainment rises by a full year in the AHEAD cohort during the follow up. The increases are more modest, but still appreciable, in the younger HRS cohort where median wealth increases from under \$125,000 to over \$140,000 and mean education grows from about 12.4 to over 12.6 years.

Figure 2 shows changes in the distributions of other important cohort characteristics. The first plot shows the mean year of birth. Surprisingly, the changes in the mean year of birth are relatively modest, especially in the HRS cohort, where the mean increases from 1936.2 by only 0.2 years over the 16-year time period (since the increase is difficult to see in the plot, we noted here the underlying statistics). In the older AHEAD cohort, the mean year of birth grows by about 4 years. The absence of steep changes in the HRS suggests that the mortality selection in this younger cohort depends only weakly on age of the individuals.

The rest of the Figure 2 shows proportions of five important demographic and health-related cohort characteristics. The proportion of men drops from about 47% to 44% in the HRS cohort and from about 41% to 33% in the AHEAD cohort. The proportion of black respondents, as well as the percent who were not married in 1994, drops over time as well. The proportion of respondents who reported that they were current or past smokers in 1994 decreases across waves, as the smokers are removed from the cohorts due to increased risk of dying compared with never-smokers. The change over time in the proportion of respondents who reported fair or poor health at baseline is particularly steep, falling from about 36% to fewer than 13% in the AHEAD cohort and from 22% to less than 16% in the HRS cohort. Just as for the number of chronic conditions, there is a crossover by 2008 so by the last wave, the older AHEAD cohort survivors appear better off than the younger HRS survivors.

DISCUSSION

Understanding how selective mortality changes the composition of surviving cohorts is important for all aging research. The selective mortality process has been well described theoretically in previous decades. More recently, sociologists and epidemiologists have used the selective mortality process to explain paradoxes between observed cohort changes over time and underlying individual changes. A critical intermediate step has been lacking: an empirical illustration of the consequences of mortality selection for key specific characteristics of aging cohorts. Our study presented a simple demonstration of the changes in the distribution of health, wealth, education, and other characteristics in two nationally-representative cohorts of older adults over the course of 16 years. Our approach was straightforward: we used information provided by respondents at the baseline interview and summarized it at every subsequent wave, including only those respondents who remained in the cohort at that particular wave. In the absence of selective mortality, the means, medians, proportions, and variance of these baseline measures would remain unchanged across all waves.

Instead, we found substantial changes in the distribution of all examined cohort characteristics over time. The direction of these changes was consistent with theoretical predictions: the average values of covariates associated with lower mortality, like good health, wealth, or education, increased over time. The average values of covariates associated with higher mortality, like poor health, or being male, black, not married, or a smoker, decreased over time. The variance of the distributions also decreased over time as those most disadvantaged at the tail of the distributions died at faster rates.

The changes occurred both in the younger HRS cohort and the older AHEAD cohort. However, the rate of the change was much higher in the latter group for whom high overall mortality---a function of its members' old age---resulted in a rapid selection process. For the two examined health measures, the number of chronic conditions and the proportion in poor/fair health, the steep change in the AHEAD cohort created a crossover with the younger HRS cohort: by the 2010 wave, these baseline health characteristics appeared more advantageous in the older cohort, compared to the much younger HRS group. With respect to economic well-being, the AHEAD cohort started with about \$90,000 in household

wealth; by the last interview the median of their 1994 value increased to over \$130,000. The mean baseline educational attainment increased by almost a full year in the AHEAD cohort over the 16 year follow up, again purely due to selective mortality.

The primary factor that influenced the faster changes in the older AHEAD cohort as compared to the HRS group is the higher overall rate of mortality attrition. This attrition removed 84% of the AHEAD sample over time; the more advantaged subgroups were more likely to remain in the sample. However, several other factors are likely to play a role in the rate of change for different cohort characteristics.

First, the more strongly a characteristic is related to the risk of dying, the more it may change over time. This is likely why the health measures (number of conditions and poor/fair self-rated health) changed so steeply in the AHEAD cohort, to a point of crossover with the younger HRS cohort: health is more closely linked to mortality than other characteristics. It is interesting to point out here that age, captured as the year of birth, changed relatively little in the HRS, suggesting that mortality at the ‘younger’ ages (the HRS spans ages from about 51–61 at the baseline) is relatively weakly associated with mortality.

Second, the initial *shape* of the distribution of a characteristic in the cohort likely matters for its rate of change over time. If a variable positively associated with higher mortality hazard is right-skewed, for instance, its initial mean is affected by this right tail; the count of chronic condition is a good example. The relatively small number of individuals in that tail, who have the highest values (most chronic conditions), are by definition particularly disadvantaged and thus most likely to die, causing a relatively large decrease in the mean of that characteristic over the follow up. A parallel situation could arise for a variable that is associated with lower mortality and has a long left tail; a good example is the distribution of educational attainment in current cohorts, where a very small proportion of the population is in the 0–8 years range but this group also has the highest mortality risk. As these individuals are removed from the aging cohort, the mean may increase steeply.

A third factor that may impact the changes in cohort composition over time is the age range of the initial cohort. Specifically, the wider a set of ages analyzed together, the larger is the variation in the mortality hazards across this differently-aged group. Thus the difference in the rates of selective mortality at the opposite ends of the age spectrum is large, meaning that the characteristics of the whole group gradually come to resemble those of the younger aged individuals as the older ones die out faster. For illustration, suppose we summarized a distribution of some characteristic for a group composed of an equal number of 20-year-olds and 80-year-olds. As this group would age, within a decade or two the proportion of the older group would dwindle to nearly zero, so the distribution would become nearly equal to the distribution of the 20-year-olds. If that characteristic were age, for instance, its mean would *decline* from 50 at the beginning to about 40 over the course of two decades, although obviously every survivor’s age *increased* by 20 years. If instead the two groups were aged 80 or 81 years old at baseline—a much smaller age range of one year across cohorts—the mean of the age distribution in the surviving cohort would increase similarly to the individual-age increases over follow up, each by about 20 years. In our analyses, the age

range of the AHEAD cohort is wider than the age range of the HRS cohort, which may help explain why the AHEAD cohort's characteristics change at a faster rate.

Finally, the rate of change in the distribution of a characteristic may depend on secular (period) changes in that characteristic across birth cohorts. If a distribution of some characteristic changes little between younger and older birth cohorts, then a group comprising different birth cohorts starts off with similar distributions of that characteristic across differently-aged members. If, however, the distribution of a characteristic changes a lot across birth cohorts then the differently-aged groups start with already different distributions. These different initial distributions then combine with differential mortality rates within groups (higher for older respondents) to influence the changes in that characteristic's distribution over time. For instance, the average educational attainment has increased steeply over time through the 20th century, so younger birth cohorts have a higher average attainment than older cohorts. Within the AHEAD group, for instance, respondents born near the turn of the century both have higher mortality and lower average education than respondents born around 1920s. As the older respondents die out of the AHEAD cohort, it's the younger respondents' higher education that is retained in the surviving sample. Thus the change in the distribution of a characteristic across subsequent birth cohorts can accelerate (or decelerate) the change in the average value of that characteristic as cohorts are followed over time.

The paragraphs above have listed some of the factors that influence the rate of change of specific characteristics in aging cohorts due to selective mortality. The main limitation of our descriptive analysis is that we could not systematically analyze the contributing impact of these four individual factors. Not only are there multiple contributing factors to the rate of change over time in the characteristics, but these factors interact with one another in complex ways, which make it difficult to isolate their effects just by observing the consequences of their interplay in a cohort. To do so, we hope to conduct simulation analyses in future studies: in a simulation, analyses can impose control over the individual factors and hold some constant while changing others to observe their effects on characteristics of the cohort. A descriptive analysis like the current study can be used as a foundation to ensure that the inputs and outputs of the simulation correspond roughly to the patterns in actual cohorts.

Additionally, we should point out that while this study has focused on the effects of selective mortality on the surviving cohorts, there are two additional phenomena that impact their composition: selection into study samples at the outset and attrition for reasons other than mortality. In terms of selection into samples, the baseline group is already a nonrandom subset of the targeted group. To some degree, the sampling weights adjust for the nonrandom non-response to surveys – which highlights the necessity of applying sampling weights appropriately (Groves & Couper, 1998; Korn & Graubard, 1999). Second, attrition occurs for a wide range of reasons, like lack of continued interest in participation in a survey, moving away from a target area, etc. As we mentioned above, we found that our results were similar when we considered total attrition in HRS and AHEAD, rather than only mortality-based attrition. This is an interesting preliminary finding and the effect of non-mortality attrition on cohort composition over time deserves more research attention.

Our study was based on longitudinal data. The implications of the findings, however, are relevant for both cross sectional & longitudinal research. A cross-sectional sample is a snapshot of the selected surviving cohort at one time point. In older cohorts, such a group may represent a highly select group of survivors. The focus on such survivors is a perfectly valid approach for many research questions – for instance, we may be interested in hospital utilization among the oldest old and thus focus on only those who survived to the relevant ages. We need to be aware, however, of the implicit conditioning on survival to the point of the study (Kurland, Johnson, Eggleston, & Diehr, 2009). Longitudinal studies typically are undertaken to describe changes in some characteristics over time. More precisely, researchers tend to be interested in *individual* changes over time but these individual changes are typically inferred from *cohort averages*. Our results highlight the differences between individual and cohort-average patterns over time and point to the need to take selective mortality into account when modeling longitudinal data collected from older adults.

Conclusion

As the world's population ages, research on older adults is becoming increasingly critical to economic, health, and social policy planning. We showed how aging cohorts may appear to become healthier, wealthier, and wiser --or at least more educated—over time as selective mortality removes less advantaged individuals from the population more quickly than others. The selection process changes the composition of older cohorts considerably, indicating that researchers focusing on the oldest old need to be aware of the highly select groups they are observing, and interpret their conclusions accordingly.

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Figure 1.

Changes in Health, Wealth, and Education Due to Selective Mortality

Baseline weights applied. AHEAD includes 1900–23 cohorts; HRS includes 1931–41 cohorts. Results are based on information reported in 1994 and summarized for survivors at each wave. In the absence of selective mortality, the lines would be horizontal.

Figure 2.

Changes in Other Cohort Characteristics Due to Selective Mortality

Baseline weights applied. AHEAD includes 1900–23 cohorts; HRS includes 1931–41 cohorts. Results are based on information reported in 1994 and summarized for survivors at each wave. In the absence of selective mortality, the lines would be horizontal.

Table 1

Characteristics of the AHEAD and HRS cohorts at the 1994 baseline (N=14,466).

	AHEAD cohort (1900–23)	HRS cohort (1931–41)
<u>Baseline characteristics</u>		
Mean year of birth	1916	1936
Proportion male	40.7%	47.4%
Proportion not married	47.3%	24.1%
Race		
White	87.2%	81.8%
Black	7.9%	10.0%
Hispanic or other	4.9%	8.3%
Educational attainment		
Less than high school	43.5%	27.8%
HS or some college	44.8%	53.4%
Bachelor's or more	11.7%	18.9%
Median wealth	\$91,000	\$123,200
Smoking status		
Never smoked	46.7%	35.2%
Former smoker	43.2%	40.2%
Current smoker	10.1%	24.6%
Self-rated health		
Excellent or very good	33.3%	49.2%
Good	30.4%	28.8%
Fair or poor	36.2%	22.0%
Number of conditions	1.50	1.22
<u>Attrition during follow up</u>		
Vital status through 2010		
Survived through 2010	15.7%	72.5%
Died during follow up	84.3%	27.5%
Number of respondents in 1994	6,940	7,526
Number of respondents in 1996	6,048	7,308
Number of respondents in 1998	5,097	7,090
Number of respondents in 2000	4,217	6,854
Number of respondents in 2002	3,374	6,565
Number of respondents in 2004	2,690	6,335
Number of respondents in 2006	2,080	6,061
Number of respondents in 2008	1,543	5,757
Number of respondents in 2010	1,048	5,363

Adjusted for sampling design. Sample includes respondents who participated in the 1994 interview, had nonzero sampling weights and were born in 1900–23 or 1931–41.