Trends in retirement age by sex, 1950-2005

A study of two data series indicates that age at final retirement has fallen by between 4 and 5 years for both men and women since mid-century; continued declines are projected for the 1990's, accelerating for the period 2000–05

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There is widespread agreement among analysts that age at retirement has declined in the United States. However, this conclusion is almost always based on the long-run decline of the labor force participation rates of older men,[1] and thus may not be a valid inference. For example, Cordelia Reimers has shown that the trends in labor force participation rates and average retirement age do not necessarily move in the same direction.[2] A valid measure of the average age at retirement that provides estimates comparable for at least several decades is needed to ascertain whether the trend is accelerating, decelerating, or moving at a steady pace.

This measure should be calculated for women as well as for men. In the past, women have been ignored for this purpose, probably because the trends in the labor force participation rates have not been uniform. Whereas the participation rates of men aged 50 and older have been falling for those of all ages, the rates for women have been rising sharply for those aged 50 to 54 and 55 to 59, while changing little for those aged 65 and over. The rates for women 60 to 64 rose considerably between 1950 and 1970, but leveled off thereafter. Thus, the faulty logic noted above—that the direction of the change in the age at retirement could be inferred from the direction of the movement of labor force participation rates—could not be used to judge what was happening to the age at retirement among women, at least not as easily as for men. Yet, the continuing influx of women to the labor force makes it increasingly unacceptable to ignore women in studying changes in the age at retirement.

Our objective, therefore, is to ascertain the level, direction, and rate of change in the average age at retirement of American men and women in the recent past, a task which, to the best of our knowledge, has yet to be accomplished. To carry out this task, we need to find or construct measures that provide a national time series of average ages at retirement over at least several decades, and that are comparable for men and women.

We propose two measures, based on two different definitions of retirement and two different types of data. Each measure is only an approximation of the measure we would like to have. However, given the great personal and societal implications of changes in the average age at retirement, reasonably good approximations should be useful.

Definitions and data sources

Two criteria often used in defining retirement are receipt of a pension, whether public or private, and withdrawal from the labor force at some advanced age for reasons other than death. These are objective criteria. The subjective criterion of self-identi-

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fication as being retired or not is also often used, but it is not suitable for our purposes because there are no long-term national time series of measures based on it.[3]

Regarding withdrawal, it is well-known that exits from and reentries to the labor force are not uncommon in the age range we examine (45 years to 75 years and over), making the criterion of withdrawal per se ambiguous. For this reason, we prefer the stricter criterion of permanent withdrawal, despite the challenge it poses in getting the requisite data.[4]

Using the two objective criteria, we examine two types of time series. One is based on the administrative records of the Social Security Administration. It is the annual mean age of persons receiving initial awards of retirement benefits. The other is based on labor force participation rates obtained in the monthly Current Population Survey.[5] The rates are for 5-year age categories in the age range 45 through 49 years to 75 years and older for every fifth year between 1950 and 1990, and as projected for 1995 through 2005.[6] The data for persons aged 75 or over are used as a proxy for those aged 75 to 79. Data on accessions to and exits from the labor force also are available from increment-decrement tables of working life, but these cover no more than the 1970's, and so are not included in this analysis.[7]

Table 1. **Mean age of persons initially awarded Social Security retirement benefits, by sex, 1950–89**

Year	Age	
	Men	Women
1950	68.7	68.0
1955	68.4	67.8
1960	66.8	65.2
1965	65.8	66.2
1970	64.4	63.9
1975	64.0	63.7
1980	63.9	63.5
1985[1]	[2]63.7	[3]63.4
1989[1]	[2]63.7	[4]63.4

[1]Estimates are based on a 1-percent sample.

[2]The mean was 63.7 in every year between 1982 and 1989, except for 1987, when it was 63.6.

[3]The mean was 63.4 in every year between 1982 and 1986.

[4]The mean was 63.3 in 1987 and 1988.

SOURCE: *Social Security Bulletin, Annual Statistical Supplement, 1990* (Social Security Administration, 1990), p. 236, table 6B5.

Methods and observations

Social Security data. There has been a large decline in the mean age of both men and women awarded retirement benefits. (See table 1.) In 1950, the average age for men was 68.7, but by the late 1980's, the mean had fallen by 5.0 years. Among women, the decline was almost as great, 4.6 years (68.0 to 63.4). This trend has decelerated, however. More than 85 percent of the total decline for both men and women had taken place by 1970, and the decrease had virtually stopped by 1982. There was no further persistent drop after that year among either men or women.

It is not surprising that the decline has decelerated as the mean age approached 62 years, because age 62 is the lower limit for collecting Social Security retirement benefits. However, further declines from current levels are possible. For example, the percentage of persons who receive these benefits at age 62 has gone up steadily, with only occasional pauses or temporary drops. Of those awarded Social Security retirement benefits in 1989, nearly half of the men and about three-fifths of the women began receiving their benefits at age 62[8]; this leaves room for further increases in those proportions.

The percentage of the labor force covered by the Social Security retirement system grew considerably between 1950 and 1989, from close to 60 percent to more than 90 percent. Thus, the earlier the reference date, the greater the risk of bias in these data in terms of representing the average age at retirement of the entire U.S. labor force. Another shortcoming is that no account is taken of receipt of pensions from other sources. In 1950, 25 percent of the labor force were covered by private or by Federal, State, or local government pension plans.[9] By 1979, this percentage had doubled to 50 percent, but then fell a bit to 46 percent by 1988.[10] There is considerable overlap with Social Security coverage, but age at first receipt of an employment-related pension may differ from age at first receipt of the Social Security retirement benefit. What is needed, but unavailable, for analysis is a long series of national data on the age at first receipt of either a Social Security retirement benefit or an employer- or union-provided pension. The Social Security series is the best approximation available at this time.

CPS data. CPS data are preferable to decennial census data for measuring the trend in retirement age. The latter source would provide information for decades prior to 1950, but the 10-year interval between observations is a major liability for the analysis of trends, and we are more interested in the post-World War II period than in the very long-run trend. In addition, the quality of CPS data is superior, despite greater sampling error and a lower population coverage rate, because of better techniques for interviewing respondents. This is especially important when one is analyzing the

behavior of people whose attachment to the labor force is intermittent or tenuous, as is true of many of the elderly. Moreover, the requisite data for 1990 are now available from the CPS, but not from the decennial census. In addition, labor force projections consistent with CPS data are available through the year 2005, permitting an extension of the analysis to that year.

Changes in labor force participation rates by sex are shown in table 2. Among men, there were nearly monotonic declines in participation rates at every age between 1950 and 1990. These declines have been greater, both absolutely and relatively, for all age cohorts 60 years and older than for cohorts 45 to 49 through 55 to 59. The higher the age, the greater the proportional decline in participation rates. The latest Bureau of Labor Statistics projections (published in 1991) call for continued declines for persons under age 65, except for men aged 50 to 54, whose labor force participation rate is projected to fluctuate around the level observed in 1990. Among men aged 65 years or over, the rates are projected to increase a little, continuing the reversal of the decline that occurred over the 1985–90 period.

Unlike the case for men, the labor force participation rates of women in each 5-year age group from 45 to 59 increased about 87 percent between 1950 and 1990, with only two deviations from a monotonic pattern. The rates for those aged 60 to 64 rose steadily between 1950 and 1970, then fluctuated modestly until 1990. Among women aged 65 or older, there were some declines from the highs of 1955 or 1960, but generally the rates fluctuated within a narrow range. Increases have been projected to 2005 for all but the oldest women (aged 75 and over) under the middle-path growth scenario developed by the Bureau; with one exception, the younger the age of the cohort, the larger the increase.

Cohort percent change in participation rates. As noted earlier, one cannot infer a fall in the average age at retirement from an array of declines in labor force participation rates for the same age groups in a single interval or sequence of intervals. To mea-

Table 2. **Labor force participation rates for persons aged 45 to 49 through 75 years or older, by sex, selected years, 1950–2005**

Sex and year	Age group						
	45 to 49 years	50 to 54 years	55 to 59 years	60 to 64 years	65 to 69 years	70 to 74 years	75 years and over
Men							
1950	96.5	95.0	89.9	83.4	63.9	43.2	21.3
1955	97.1	95.7	92.5	82.6	57.0	37.1	19.4
1960	96.9	94.7	91.6	81.1	46.8	31.6	17.5
1965	96.1	95.0	90.2	78.0	43.0	24.8	14.1
1970	95.3	93.0	89.5	75.0	41.6	25.2	12.0
1975	94.1	90.1	84.4	65.5	31.7	21.1	10.1
1980	93.2	89.2	81.7	60.8	28.5	17.9	8.8
1985	93.3	88.6	79.6	55.6	24.5	14.9	7.0
1990	92.3	88.8	79.8	55.5	26.0	15.4	7.1
Projected:[1]							
1995	92.0	88.8	79.4	54.7	26.6	15.4	7.4
2000	91.8	89.0	79.2	54.2	27.3	15.6	7.3
2005	91.6	88.8	78.8	53.3	27.9	15.5	7.2
Women							
1950	39.9	35.7	29.7	23.8	15.5	7.9	3.2
1955	45.8	41.5	35.6	29.0	17.8	9.2	4.0
1960	50.7	48.7	42.2	31.4	17.6	9.5	4.4
1965	51.7	50.1	47.1	34.0	17.4	9.1	3.7
1970	55.0	53.8	49.0	36.1	17.3	9.1	3.4
1975	55.9	53.3	47.9	33.2	14.5	7.6	3.0
1980	62.1	57.8	48.5	33.2	15.1	7.5	2.5
1985	67.8	60.8	50.3	33.4	13.5	7.6	2.2
1990	74.8	66.9	55.3	35.5	17.0	8.2	2.7
Projected:[1]							
1995	79.1	71.0	58.4	37.9	18.2	8.4	2.5
2000	82.7	74.8	61.9	39.5	19.7	8.5	2.7
2005	85.1	77.6	64.5	40.9	20.7	8.5	2.6

[1] Projected rates are unpublished 1991 middle-scenario estimates from the Bureau of Labor Statistics economic projections program.

NOTE: See text and the appendix for information about sources and methods. Data for 1990 are from the Bureau of Labor Statistics monthly publication, *Employment and Earnings*, January 1991.

sure the changes more appropriately, we have calculated a series of rates of change, in cohort form, as a step in calculating the median age at retirement. Specifically, we have calculated the percent change in the participation rate for the same cohort during each 5-year period. When r represents the rate for a 5-year age group on some date, the cohort percent change in the rate is given by $[1 - r_2/r_1]$, where r_1 is the rate on the initial date and r_2 is the rate on the terminal date for the same birth cohort over the 5-year period. These percent changes are adjusted for mortality during the interval. They are then used to derive the median age at retirement.

Because data on the gross flows of persons between labor force states have shown that there are entries to, as well as exits from, the labor force among the elderly,[11] the formula encompasses the net effect of accessions to and withdrawals from the labor force during each period. In the age range used for these calculations (45 to 49 years through 75 to 79 years), withdrawals exceeded accessions at all ages among both men and women as of 1980.[12] Hence, we call this measure a "net withdrawal rate." Some of the withdrawals will become accessions at an older age. Within a given 5-year interval, accessions offset withdrawals within the same cohort, to some degree. The net withdrawal rate is thus an approximate measure of permanent withdrawal. The measure is biased to the extent that the age distribution of accessions does not match the age distribution needed to offset the *temporary* withdrawals in any period. Information about these distributions is not available.

Multiplying the net withdrawal rate by the number of persons in the labor force on the initial date and by the square root of the survival rate for a 5-year age cohort produces the numbers of net withdrawals that occur for reasons other than death. With the array of these numbers for each cohort for each 5-year period, the median age of net withdrawal (that is, retirement) is calculated for each 5-year time interval. The equation is:

$$W = \sqrt{s}\ [1 - (r_2/r_1)]\, L_1$$

where s is the 5-year life-table survival rate; L_1 is the number of persons in the labor force on the initial date; and W is the number of net nondeath withdrawals for the cohort over the 5-year period. (See the appendix for more information.)

Focusing on the net withdrawal rates between 1950 and 1990, we see a strong tendency for them to increase with age. (See table 3.) There is also a tendency for these rates to increase over time, but it is weaker than the age relationship, especially at the higher ages. Among the youngest women, the cohort labor force participation rate sometimes increases with age, producing a *negative* net withdrawal rate. The proportional increases over time in the net withdrawal rate were greater the younger the age group. This pattern is the reason for the decline in the median age at retirement, to which we turn next. The inverse relationship between age and proportional increases in the net withdrawal rate is stronger for women than for men. This fact accounts for the greater decline between 1950 and 1990 in women's median retirement age. As compared to the late 1980's, the projected labor force participation rates result in pronounced increases in the net withdrawal rate among all women except those aging from 60 to 64 years to 65 to 69 years during each 5-year period. Among men, the withdrawal rates increase only at ages 50 to 54, 55 to 59, and 65 to 69, as each of these age groups becomes 5 years older.

Median age at retirement. In general, the magnitude and the pace of the decline in the median age of retirement, as calculated from these data, have to date been similar for men and women. (See table 4.) From the early 1950's through the late 1980's, the median age fell 4.3 years among men and 4.9 years among women. As noted above for the Social Security series, the pace of decline decelerated considerably beginning in the 1970's. Among men, 80 percent of the total decline occurred by the early 1970's. The comparable figure for women is more than 95 percent. However, the projected labor force participation rates imply a resumption during the late 1990's of the decline, which accelerates during the interval 2000–05.

Implications of the results

Using two different measures of retirement (namely, age at initial receipt of Social Security retirement benefits and age at withdrawal from the labor force), we have found similar trends in the average age at retirement between 1950 and 1990. Both series show a decline, with the magnitudes of the declines similar—between 4 and 5 years. The pace of change in the decline was also similar, with a marked deceleration appearing in both sets of averages sometime during the 1970's. Finally, both series indicate that the magnitude and pace of decline were similar for men and women.

So far, the two data sets have been compared with respect to the direction and rate of change. What about the levels of the average ages? In that respect there is less similarity, with the Social Security averages being larger than the labor force medians throughout the interval from the early 1950's through the late 1980's (except among women during the late 1950's). Among men, the differences were about 2 years during the 1950's, but then decreased to about 1 year from 1965–70 onward. Among women, the differences seemed

negligible during the 1950's (perhaps indicating faulty data), but were about 1 year during the 1960's, falling thereafter to a fluctuating range of 0.4 to 0.8.

One reason for the higher age levels in the Social Security series is that there is an upward bias in the data, as compared with the labor force data; specifically, the minimum age in computing averages is considerably higher for the Social Security data than for the labor force data. The youngest age at which one can receive a Social Security retirement benefit is 62. (The minimum age was 65 for women prior to 1956, and for men prior to 1961.) However, in calculating the *median* age at withdrawal from the labor force using CPS data, the lower limit of the age range we used was 50 to 54 years. Another reason for the difference between the two series may be that the labor force series underestimates the age at permanent withdrawal, because net withdrawals may have a different age distribution than do permanent withdrawals. Finally, given the right skewness of the retirement-age curve, the mean would be larger than the median.

A decline in the average age at retirement, as well as a gain in longevity, tends to raise the economic dependency burden placed by the elderly on younger cohorts still in the labor force. This, in turn, tends to make increases in per capita income harder to achieve, even as the costs of income transfers to the elderly rise. Hence, given continued population aging and increases in longevity, the issues of the desirability and feasibility of reversing the decline in the retirement age are sharpened. Despite recurrent forecasts over the years of a reversal, our data indicate that it has not hap-

Table 3. **Net labor force withdrawal rates for persons aged 45 to 49 through 75 to 79, by sex, selected periods, 1950–2005**

Period	Terminal ages					
	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79
	Initial ages					
	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74
Men						
1950–55	0.0081	0.0255	0.0772	0.2942	0.3768	0.4759
1955–60	.0242	.0415	.1175	.4027	.3981	.4512
1960–65	.0192	.0460	.1418	.4380	.4223	.4777
1965–70	.0317	.0562	.1607	.4349	.3729	.4415
1970–75	.0535	.0899	.2563	.5388	.4457	.5153
1975–80	.0513	.0909	.2691	.5314	.3989	.5097
1980–85	.0487	.1052	.3085	.5661	.4396	.5393
1985–90	.0476	.0973	.2933	.5062	.3451	.4665
1990–95	.0374	.1033	.3026	.4906	.3719	.4519
1995–2000	.0322	.1057	.3061	.4733	.3788	.4600
2000–05	.0323	.1123	.3162	.4600	.3974	.4735
Ratio:						
1985–90/1950–55	5.9	3.8	3.8	1.7	0.9	1.0
2000–05/1950–55	4.0	4.4	4.1	1.6	1.1	1.0
Women						
1950–55	–.0396	.0027	.0229	.2417	.3799	.4458
1955–60	–.0626	-.0166	.1151	.3782	.4367	.4723
1960–65	.0117	.0323	.1899	.4300	.4562	.5582
1965–70	–.0402	.0216	.2283	.4750	.4517	.5749
1970–75	.0306	.1081	.3154	.5793	.5336	.6178
1975–80	–.0337	.0889	.3009	.5288	.4625	.6258
1980–85	.0208	.1282	.3057	.5771	.4761	.6625
1985–90	.0132	.0894	.2892	.4776	.3767	.6044
1990–95	.0504	.1253	.3079	.4714	.4812	.6442
1995–2000	.0539	.1265	.3170	.4652	.5081	.6313
2000–05	.0612	.1360	.3327	.4618	.5431	.6480
Ratio:						
1985–90/1950–55	(1)	32.5	12.6	2.0	1.0	1.4
2000–05/1950–55	(1)	49.5	14.5	1.9	1.4	1.5

[1] Not calculated because the estimate for 1950–55 is negative.

NOTE: Estimates are adjusted for mortality during each 5-year period.

SOURCE: Estimates are calculated from data shown in table 2, using the formula $\sqrt{s}\ (1 - r_2/r_1)$. See the text and the appendix for information about sources and methods.

pened yet. Nor does it appear likely to do so for at least another decade. There has been a marked deceleration in the decline during the past 15 years or so, leading one to wonder whether a leveling off, if not a reversal, is approaching. However, the medians based on the projected labor force data indicate a continuation of the leveling only until 1995, followed by a pronounced resumption of the decline. Whether the projections will be borne out remains to be seen, but the accuracy of a projection is usually poorer the further away the period for which it is made.

Whether the findings in this study are well-founded depends on the adequacy of the measures. Each of the two measures has a number of shortcomings. The receipt of a Social Security retirement benefit is limited as a proxy for the receipt of any pension benefit because it does not include pensions provided in the private sector and by the civil and military services, for which age at initial receipt of benefits often is under 62. Moreover, the average age of recipients at the initial award of Social Security retirement benefits is biased upward because the lower age limit for receiving an award (62 years) is relatively high. In addition, the further back in time one goes in the Social Security series, the larger the proportion of the U.S. labor force that was not covered by the program, increasing the risk that the data were not representative of the retirement behavior of the labor force.

As for the use of our "net withdrawal rate," calculated from CPS labor force data, as a measure of permanent withdrawal from the labor force, it is approximate in that it is unclear how permanent the withdrawals are among all but the oldest men and women, and the net withdrawals may not imply an unbiased age distribution of accessions offsetting withdrawals.

The shortcomings of the Social Security measure are compensated for by the labor force measure: the latter covers all pension recipients except the institutional population, and is not subject to the upward bias of the Social Security measure because its minimum age limit is much lower. The Social Security measure compensates to some extent for a major shortcoming of the labor force measure in that, for persons aged 62 and over, it is a direct measure based on administrative records.

Thus, a question arises regarding the similarity between the two measures as to the levels of the average age at retirement and the variations in their pace of change. Is the similarity simply a coincidence, or does it reflect reality? There is evidence from a 1985 study by Sally R. Sherman that, as of 1980–81, about two-thirds of first-time recipients of Social Security retirement benefits stopped work either before receipt of the benefit or within 6 months of receipt. About one-fourth were still working, and the remaining 8 percent stopped work more than 6 months after receipt.[13] To the extent that the ages of the latter two categories of persons balance the ages of those who stopped work more than 6 months before receipt (26 percent of men and 44 percent of women), the average age of withdrawal from the labor force would be just about the same as that at first receipt of the benefits. In Sherman's study, age at work stoppage was not given, nor could the study ascertain whether the stoppage of work was permanent. Moreover, the relationships reported in her study do not necessarily hold for periods earlier or later than the 1980–81 reference period. Nevertheless, the study provides some evidence that there may be a fairly high degree of congruence between the average ages at initial receipt of Social Security retirement benefits and at withdrawal from the labor force. Further investigation in order to assess the degree of congruence more precisely would be useful.

Further research also is needed to learn how good an approximation: 1) the average age at initial receipt of Social Security retirement benefits is to the average age at initial receipt of any pension; and, 2) the net withdrawal rate is to the rate of permanent withdrawal from the labor force. In conducting such research, as well as in evaluating the findings presented in this article, it is important to distinguish between the *level* and the *trend* of the average age at retirement. The average ages reported here may not be highly accurate. However, that would not necessarily rule out the accuracy of the magnitude of the decline or its deceleration as indicated by the data, unless the degree of error associated with the level varied over time.

Table 4. **Median age at retirement, by sex, 1950–55 to 2000–05**

Period	Age	
	Men	Women
1950–55	66.9	67.7
1955–60	65.8	66.2
1960–65	65.2	64.6
1965–70	64.2	64.2
1970–75	63.4	63.0
1975–80	63.0	63.2
1980–85	62.8	62.7
1985–90	62.6	62.8
1990–95[1]	62.7	62.6
1995–2000[2]	62.3	62.0
2000–05[3]	61.7	61.2

[1]Based on 1990 actual and 1995 projected data.

[2]Based on projected data for 1995 and 2000.

[3]Based on projected data for 2000 and 2005.

SOURCE: Estimates were calculated from 5-year age-specific labor force data obtained in the Current Population Survey and life-table survival ratios. See text and appendix for description of the method.

The estimates of the 1950 labor force participation rates (for persons of all ages) are probably somewhat poorer than those for later periods, as are the 1955 and 1960 participation rates for persons aged 70 to 74 years and 75 years or older. (See the description of the sources and methods for table 2 in the appendix.) Hence, estimates of the level of the average age at retirement and of the changes in the level for the 1950's may be subject to greater error than are those for later decades, as a result of the poorer quality of the data for 1960 and 1955, and particularly for 1950.

IN CONCLUSION, there is little doubt that the average age at retirement of U.S. men and women has fallen by several years during the past four decades. It is less certain that the decline decelerated greatly during the 1970's and particularly during the 1980's. Although our findings are based (so far as we know) on the best measures currently available, further work clearly is needed to improve the measurement of the average age at retirement and to validate the available measures. □

Footnotes

[1] A notable exception is Bert Kestenbaum's 1985 study, which, although limited to men, provides a rigorous analysis of the change in the extent to which the cohorts of men born between 1903 and 1910 retired early. See Bert Kestenbaum, "The Measurement of Early Retirement," *Journal of the American Statistical Association*, March 1985, pp. 38–45.

[2] See Cordelia Reimers, "Is the Average Age at Retirement Changing?" *Journal of the American Statistical Association*, September 1976, pp. 552–58.

[3] See Herbert S. Parnes, Joan E. Crowley, R. Jean Haurin, Lawrence J. Less, William R. Morgan, Frank L. Mott, and Gilbert Nestel, *Retirement among American Men* (Lexington, MA, Lexington Books, D.C. Heath and Co., 1985), ch. 3, for a comparison of the results of using these three criteria.

[4] This criterion has been used by other analysts. See, for example, Reimers, "Is the Average Age at Retirement Changing?"; and Kestenbaum, "The Measurement of Early Retirement."

[5] The Current Population Survey (CPS), conducted by the U.S. Bureau of the Census under contract to the Bureau of Labor Statistics, is a monthly survey of some 60,000 households, selected to represent the U.S. population 16 years of age and over.

[6] Five-year age cohorts and five-year intervals were preferred to those of one year because the former are more readily available, subject to less sampling error, and are influenced less by short-term business cycle fluctuations. Also, labor force projections data are not available by single years of age. See Philip L. Rones, "Using the CPS to track retirement trends among older men," *Monthly Labor Review*, February 1985, pp. 46–49, for an example of the use of single-year data.

[7] See Shirley J. Smith, *Tables of Working Life: The Increment-Decrement Model*, Bulletin 2135 (Bureau of Labor Statistics, 1982); and Shirley J. Smith, *Worklife Estimates: Effects of Race and Education*, Bulletin 2254 (Bureau of Labor Statistics, 1986). See also Mark D. Hayward, William R. Grady and Steven D. McLaughlin, "Changes in the Retirement Process Among Older Men in the United States: 1972–80," *Demography*, August 1988, pp. 371–86.

[8] *Social Security Bulletin, Annual Statistical Supplement, 1990* (Social Security Administration, 1990), p. 236.

[9] Jon R. Moen, "Past and Current Trends in Retirement: American Men from 1860 to 1980," *Economic Review of the Federal Reserve Bank of Atlanta*, July-August, 1988, pp. 16–27.

[10] John R. Woods, "Pension Coverage among Private Wage and Salary Workers: Preliminary Findings from the 1988 Survey of Employee Benefits," *Social Security Bulletin*, October 1989, pp. 2–19.

[11] Smith, *Worklife Estimates*.

[12] *Ibid.*

[13] Sally R. Sherman, "Reported Reasons Retired Workers Left Their Last Job: Findings from the New Beneficiary Survey," *Social Security Bulletin*, March 1985, pp. 22–30.

APPENDIX: Sources and methods

Table 2

Sources. Data shown in table 2 for 1965 through 1985 are from *Labor Force Statistics Derived from the CPS, 1948–87*, Bulletin 2307 (Bureau of Labor Statistics, August 1988), table B–4. Earlier data were obtained from:

- *1960: Labor Force and Employment, 1960*, Special Labor Force Report no. 14 (Bureau of Labor Statistics, April 1961), p. A–14, table B–2.

- *1955*: Personal communication from the Bureau of Labor Statistics. (*Current Population Reports*, Series P-23, No. 59 (Bureau of the Census, May 1976), contains the same labor force participation rates for persons aged 55 to 59 through 70 and over as does the personal communication, except for men aged 60 to 64, for whom there was a difference of 0.1 percentage point.)

- *1950*: Ten-year age-specific CPS labor force data from the *Handbook of Labor Statistics*, Bulletin 2217 (Bureau of Labor Statistics, 1985), tables 3, 4, 5, and 13. The 10-year age-specific data were disaggregated into 5-year categories in the same proportions as were the comparable data reported in the 1950 Census of Population. The disaggregation was performed separately for persons in the civilian labor force and those not in the labor force, the institutional inmates being excluded.

Methods. Initially, the terminal age category for all periods was 70 years and over, but when *Labor Force Statistics Derived from the CPS, 1948-87* became available, it provided data for the age categories 70 to 74 years and 75 years and over. To take advantage of this additional information, it was necessary to disaggregate the data for persons aged 70 and over in 1950, 1955, and 1960.

The disaggregation of the age category 70 years and over was accomplished as follows: Data from the 1950

the number aged 70 and over. The product of this ratio and the estimated CPS number of persons 70 and over produced the estimated CPS number for those aged 75 and over. Then, by subtraction (total, aged 70 and over minus total, aged 75 and over), the estimated CPS number of persons 70 to 74 years of age was obtained.

The disaggregation for 1955 was done in two steps. First, the numbers of persons in the civilian noninstitutional population and in the labor force aged 65 and over (from the *Handbook of Labor Statistics*) were disaggregated into cohorts aged 65 to 69 and 70 and over. The disaggregation of the civilian noninstitutional population was done by using the distribution implied by the following labor force participation rates:

Age	*Labor force participation rate*	*Source*
65 and over . .	39.6	*Handbook of Labor Statistics*
65 to 69	57.0	BLS communication
70 and over .	28.1	BLS communication

Then, the product of the labor force participation rates and the civilian noninstitutional population produced the estimated number in the labor force.

In the second step, the proportions of the civilian noninstitutional population and of the labor force aged 70 and over who were 75 and over were obtained by linear interpolation between the values calculated for 1950 and 1960. Then, the product of these proportions and the appropriate numbers produced the estimated numbers of persons aged 75 and over. The numbers of persons aged 70 to 74 were then obtained by subtracting the estimated total aged 75 and over from the total aged 70 and over.

Table 3

The cohort percent change in the labor force participation rate $(1 - r_2/r_1)$ was adjusted for the mortality of the withdrawals during the reference period by multiplying it by the square root of the life-table survival ratios for each 5-year interval ($\sqrt{s}$). These ratios were calculated from the national life tables for 1952, 1957, 1962, 1967, 1972, 1977, 1982, and 1987. The survival ratios for 1990–95, 1995–2000, and 2000–05 are population survival ratios, calculated from Census Bureau population projections *Projections of the Population of the United States, by Age, Sex, and Race: 1988–2080, Current Population Reports*, Series P-25, No. 1018, January 1989, p. 137, table B-2a). The survival ratios for 1952 were calculated as a weighted average of white and nonwhite survival ratios. The weights used were: white, 0.9, and nonwhite, 0.1.

Calculating age at withdrawal

The formula $\sqrt{s}\,(1 - r_2/r_1)\,L_1$ (where s is the 5-year life-table survival rate; $(1 - r_2/r_1)$ is the cohort percent change in the labor force participation rate over 5 years; and L_1 is the number in the cohort who are in the labor force at the beginning of each 5-year interval) produces the estimated *number* of net withdrawals during a 5-year interval as the 5-year birth cohort (identified by age as of each date) ages 5 years. For example, the estimated numbers (in thousands) of net withdrawals of men during the interval 1980–85 (using the cohort aged 75 and over as a proxy for that aged 75 to 79) were:

Cohort aged—	*Number (in thousands)*
45–49 to 50–54	242
50–54 to 55–59	520
55–59 to 60–64	1,368
60–64 to 65–69	1,589
65–69 to 70–74	483
70–74 to 75–79	271
Total	4,473

The next step was to estimate the number of net withdrawals in each 5-year age category from ages 50 to 54 onward. From the estimates of net withdrawals for 5-year cohorts, net withdrawals centered at 5-year age groups were obtained by using the Karup-King Third-Difference formula for osculatory interpolation.[1] Then, the median age was calculated from these estimated numbers.

As noted in the text, there were several instances among the women when the net withdrawal rates were *negative*, implying net *accessions*, rather than withdrawals. In computing the median ages, after obtaining the centered values, the remaining net accessions were regarded as *zero withdrawals*. This appeared three times, all among women at the centered age of 50–54, for the periods 1950–55, 1955–60, and 1965–70. If these negative values are *not* excluded from the calculation of the median age, the results are:

Period	*Median age*
1950–55	68.2
1955–60	67.0
1965–70	64.5

Footnote to the appendix

[1]See Henry S. Shryock, Jacob S. Siegel, and Associates, *The Methods and Materials of Demography*, condensed edition by Edward G. Stockwell (New York, Academic Press, 1976), pp. 534–35.