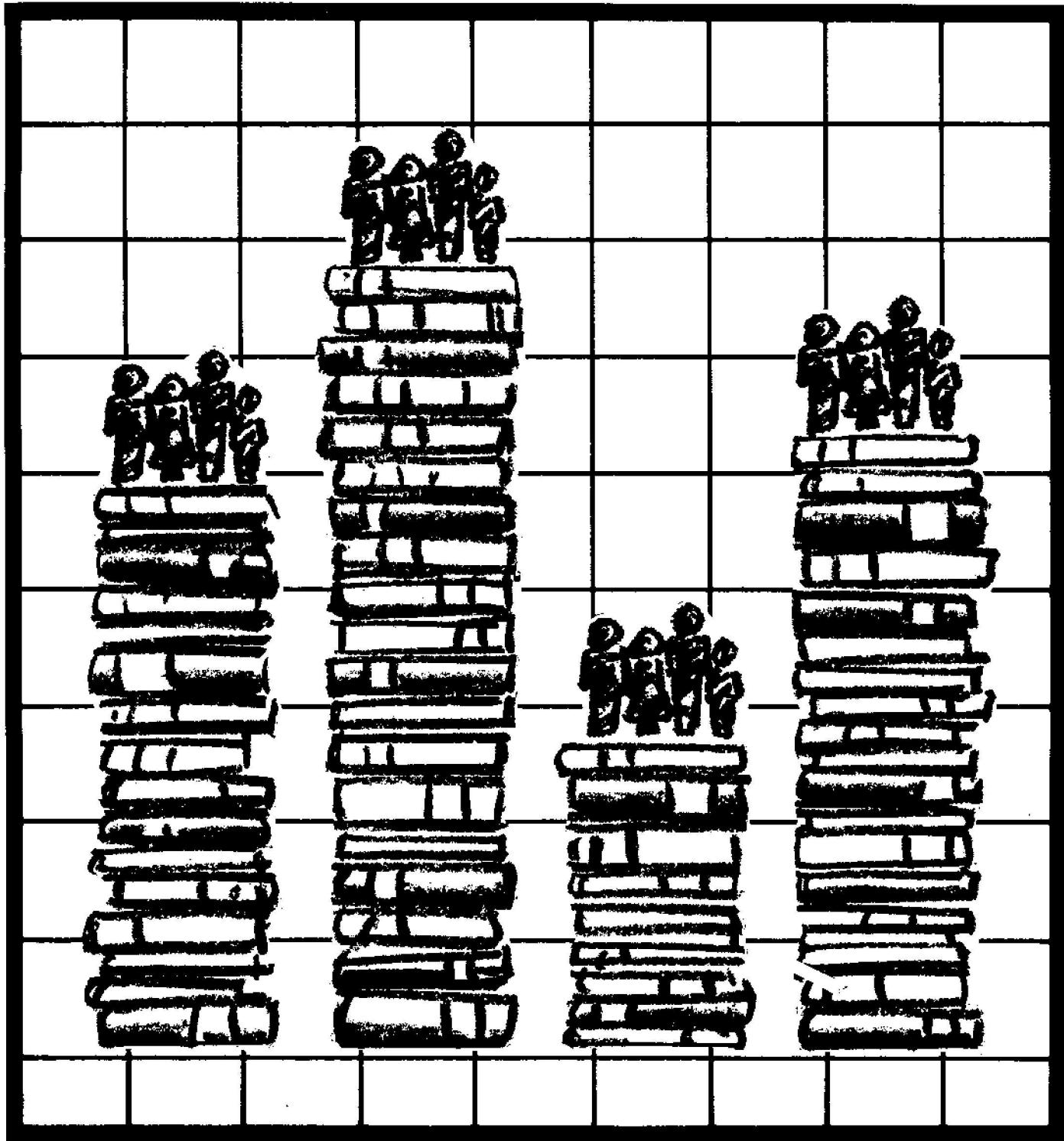


# Worklife Estimates: Effects of Race and Education



U.S. Department of Labor  
Bureau of Labor Statistics  
February 1986

Bulletin 2254



# **Worklife Estimates: Effects of Race and Education**



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U.S. Department of Labor  
William E. Brock, Secretary

Bureau of Labor Statistics  
Janet L. Norwood, Commissioner  
February 1986

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## Preface

This bulletin on new estimates of working life for men and women continues the BLS series begun in 1950, and incorporates methodological improvements introduced in 1982. It contains, in addition to a discussion of changes in worklife expectancy since 1977—first published in the March 1982 *Monthly Labor Review*—updated and expanded worklife tables for 1980, including the effects of race and educational attainment on worklife expectancy.

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is based on a paper she and Francis W. Horvath, an economist with the Bureau, presented at the 1984 annual meeting of the Population Association of America, Minneapolis, Minnesota. Robert J. McIntire and Jeannette Montgomery, of the Data Services Group, assisted in the preparation of the tables. The text for this bulletin is reprinted from the August 1985 *Monthly Labor Review*, pages 23-30, and includes some data corrections.

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# Revised worklife tables reflect 1979–80 experience

*New worklife estimates, based on an expanded sample of individuals, provide more complete measures of labor force behavior than were previously possible; the effects of race and educational attainment on lifetime economic activity are explored for the first time*

SHIRLEY J. SMITH

It is estimated that if mortality conditions and labor force entry and exit rates held constant at levels observed in 1979 to 1980, males born during those years would work about a third longer (38.8 years) over their lifetimes than would their female counterparts (29.4 years). Whites would work considerably longer than blacks and others, with white women working more than 2 years longer and white men nearly 7 years longer than their minority counterparts. The impact of education would be seen not only in occupational choice, but also in the total length of time spent in the labor force. Although remaining in school might delay career entry, those who studied longest would also spend the most years being economically active.

The Bureau of Labor Statistics has been producing worklife estimates for the U.S. population since 1950. Initially, these estimates portrayed workers as being continuously active from the time of initial labor force entry until final retirement. In 1982, after completing a major study of worklife methodology, the BLS published its first set of increment-decrement, or multistate, working life tables for the years 1970 and 1977.<sup>1</sup> Based on observed rates of labor force entry and exit at all ages, those tables for the first time

quantified the impact of midlife labor force withdrawal and reentry on worklife duration. Their publication drew responses from many economists involved in litigation of wrongful injury or death cases. Several such responses have been published in the *Monthly Labor Review*,<sup>2</sup> and some of the refinements proposed by readers have since been implemented in BLS worklife research.<sup>3</sup>

This analysis incorporates some of those refinements, updates the 1982 study, and presents a new set of official worklife estimates based on patterns observed during the period 1979–80. It also adds two new dimensions to the discussion, for the first time exploring how race and educational background affect lifetime labor force behavior.

## Method of the new study

As was the case with previous BLS worklife estimates, the new figures have been calculated from information collected in the Current Population Survey (CPS), a nationwide monthly household survey conducted by the Bureau of the Census on behalf of the BLS.<sup>4</sup> Individuals are interviewed during each of 4 successive months, and again in the same 4 months of the following year. Questions focus on the labor force behavior of household members during the week preceding each interview.

For the period of study, CPS records have been matched so that each person's status at the beginning and end of a 12-month interval can be compared. Labor force transitions

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have been registered if labor force status changed between the two reference dates. Transition rates have been developed for each age, sex, race, and educational category to identify the group's unique pattern of labor force mobility.

The worklife tables for 1977 were derived from a single matched sample of about 40,000 persons, interviewed in January 1977 and again in January 1978. To provide the additional demographic detail presented below, the current study pools six matched samples focusing on individuals' labor force status in a given month of 1979 and in the same month of 1980. Specifically, the study focuses on persons interviewed in the following months of each of the 2 years: January, March, May, July, September, and November. Together the six samples include nearly 255,000 matched responses.<sup>5</sup>

The multistate working life table model is extremely sensitive to rapid changes in rates of labor force entry or withdrawal. Tables based on a recessionary period, during which labor force exits increase, present a very bleak picture of lifetime labor force involvement. Conversely, those calculated during periods of rapid recovery or expansion tend to overstate the average degree of lifetime labor force attachment. To avoid the problems caused by the cyclical swings of the early 1980's, the current study rests on data for a somewhat earlier but less turbulent period, 1979 to 1980.

The cost of avoiding cyclical irregularities in this way is that certain secular trends may be understated. To the extent that underlying patterns of male and female labor force involvement have converged since 1980, the sex differentials in this report may overstate those now in evidence. However, until it is possible to update the tables again, the 1979-80 period has been judged the most viable for calculation of multistate worklife estimates.

### Factors affecting worklife duration

In the working life tables for 1970 and 1977, worklife duration was treated as if it were a simple function of sex and age. Tables were prepared separately for men and women, giving no additional demographic or functional detail by race, educational attainment, occupation, or other characteristics that might distinguish high from low turnover groups.

In reality, labor force attachments are influenced by a variety of factors, including training, health, marital and family responsibilities, economic opportunity, and additional sources of income. However, it is not feasible to control for all of these factors in computing worklife expectancy. For example, while worklife estimates by occupation are in particular demand, it would require development of a clustering scheme for occupations by prevailing work patterns, together with study of job changes among potentially hundreds of occupations, to compute them. The only other approach is to assume that no such changes occur.<sup>6</sup> Because neither of these alternatives is practical, no such estimates are computed. Nonetheless, this study does add

two new dimensions to the estimation of worklife: race and education. Tables are presented separately for each of these two variables. However, the combined impact of race and education has not been computed because the present matched sample is too limited to develop reliable joint probabilities.

Working life tables show the combined effects of mortality and labor force mobility rates on lifetime labor force involvement. The mortality estimates used in this report are averages of the 1979 and 1980 values released by the National Center for Health Statistics.<sup>7</sup> Tables by race incorporate the effects of sex- and race-specific mortality. Those focusing on education employ only sex-specific rates, because there are no comparable mortality tables by education. Of course, access to health care is apt to be correlated with schooling. If it were possible to quantify this relationship, the tables would probably show still wider discrepancies between the worklives of the less and more educated.

Apart from the factors listed above, all of which affect the behavior of workers, certain properties of the data may also influence our perception of that behavior. Model assumptions and sample design are two such factors. The BLS worklife model has changed little since 1977; it should cause no marked discontinuities.<sup>8</sup> However, the expanded sample, in which subsets are observed at six different points during the year, captures more labor force mobility than was evident in the earlier tables. In particular, the new sample includes two groups of persons whose labor force behavior was observed, retrospectively, in May and July of each of the 2 years. This is the period during which students and seasonal workers are most likely to report themselves as economically active.

Neither worklife expectancies nor net flows appear to have changed greatly between 1977 and the end of the decade. But rates of labor force accession and separation rose noticeably. Because of modification of the sample, such differences should not be interpreted as an accurate reflection of "changes" in mobility rates.

### Developments between 1977 and 1979-80

The general relationships observed in earlier worklife tables remained valid through the end of the 1970's. Women continued to have higher probabilities of labor force exit and reentry than men. Consequently, men continued to have longer worklives, on average, than women. (See table 1.) Not surprisingly, the worklife expectancy of persons in the labor force was higher than that of the inactive population. The gap was small for young persons, but widened considerably with age. Men who were in the labor force at age 50 could expect to work 4.8 years longer than other men at that age. The comparable figure for women was 4.5 years.

Between 1977 and 1980, the cross-sectional participation rates of men changed very little. (See table 2.) Those of older teenagers and men above the age of 55 dropped slightly. In contrast, the activity rates of women continued to climb. There was an overall gain of more than 3 percentage points,

**Table 1. Worklife expectancy of the population, 1970 and 1977, and of all persons by labor force status in 1979-80, by sex and age**

[In years]

Sex and age	Worklife expectancy of the population		Worklife expectancy by current labor force status, 1979-80		
	1970	1977	Total	Active	Inactive
<b>Men</b>					
0	37.8	37.9	38.8	—	38.8
16	38.7	38.5	39.1	39.8	38.3
20	37.3	36.8	36.8	37.4	35.7
25	34.4	33.4	33.1	33.5	31.8
30	30.6	29.2	28.9	29.2	27.1
35	26.1	24.7	24.5	24.8	22.1
40	21.7	20.3	20.0	20.4	16.9
45	17.4	15.9	15.7	16.3	11.8
50	13.4	11.7	11.6	12.3	7.5
55	9.5	7.8	7.8	8.7	4.2
60	6.0	4.3	4.4	5.7	2.2
65	3.1	1.9	2.3	4.1	1.2
70	1.4	.9	1.2	3.2	.4
75	.6	.5	.6	1.7	.0
<b>Women</b>					
0	22.3	27.5	29.4	—	29.4
16	22.5	27.7	29.3	30.1	28.7
20	21.3	26.0	27.2	27.9	26.1
25	19.0	23.0	24.0	24.8	22.6
30	16.7	19.9	20.8	21.7	19.1
35	14.6	16.8	17.6	18.6	15.7
40	12.3	13.7	14.3	15.5	12.1
45	9.9	10.5	11.1	12.5	8.4
50	7.5	7.5	8.0	9.8	5.3
55	5.2	4.8	5.2	7.2	2.9
60	3.1	2.5	3.0	5.0	1.5
65	1.4	1.1	1.5	3.8	.7
70	.5	.5	.8	3.0	.3
75	.1	.1	.3	1.3	.0

with the largest change occurring in the age range 25 to 54. This change in cross-sectional rates signaled shifts in the underlying patterns of labor force involvement. However, because the multistate model builds on flow data (that is, entry and exit rates) rather than stocks (activity rates), the relationship between changes in activity rates and worklife values is sometimes weak.<sup>9</sup>

During the period in question, the observed participation rate for men 16 and older edged downward from 77.7 percent to 77.4 percent, while their worklife expectancy rose by .6 years. Worklife expectancies held steady for men aged 55 to 64, despite a modest drop in activity rates. Further, despite the observed drop in participation rates of those 65 and older, worklife expectancies for these men actually rose slightly as life expectancy increased.

Among women 16 and older, whose total activity rate rose by 3.1 percentage points, worklife duration increased by 1.8 years. The fact that expectancies rose across the board indicates that women of all ages were developing a stronger bond with the job market.

The relationship between lifespans and worklife expectancies is particularly revealing. (See table 3.) Between 1977 and the end of the decade, the life expectancy of the average 20-year-old man rose by half a year. His worklife expectancy went unchanged, the entire gain being allocated to nonmarket activity. Women of the same age also gained a

half year of life, but allocated this additional time to labor force activity and reduced nonmarket time by an average of .7 years, for a total worklife gain of 1.2 years. As a result, the sex differential in worklife continued to narrow. Whereas in 1977 the 20-year-old woman could expect to work 70.7 percent as long as her male counterpart, by 1979-80 the ratio had risen to 73.9 percent.

The trend toward earlier retirement observed between 1970 and 1977 appeared to have leveled off in the closing years of the decade. The worklife expectancy of 65-year-old men, which had dropped from 3.1 years in 1970 to 1.9 in 1977, was 2.3 years by the end of the decade. (See table 4.) For women of a comparable age, the figure had dropped from 1.4 to 1.1 years, but stood at 1.5 years by 1979-80. The model's insensitivity to hours of work makes it difficult to interpret these changes. They may well reflect the impermanence of many retirement decisions, and the fact that so-called retirees often resume part-time jobs for either economic or social reasons.<sup>10</sup>

The new tables show little change in the proportion of persons expected to die while economically active. (See table 4.) In 1977, the figures for men and women were 27.0 percent and 9.5 percent, respectively, compared with 27.4 percent and 10.4 percent for 1979-80.

### Differentials by race and education

Although expansion of the data base for the present study has obscured our view of changing labor force mobility rates, this loss has been more than offset by an improved perspective on racial and educational differentials. Data users have long pressed for more focused tables, and the new estimates should meet some of their more urgent needs.

Life table models derive their estimates of lifetime behavior not from panel studies but from a series of cross-sectional surveys collected during a single year. Each age

**Table 2. Annual average civilian labor force participation rates by sex and age, 1977 and 1980**

[In percent]

Sex and age	1977	1980	Change, 1977-80
<b>Men, total</b>			
16-17	77.7	77.4	-.3
18-19	50.3	50.1	-.2
20-24	72.5	71.3	-.2
25-34	85.7	85.9	2
35-44	95.4	95.2	-.2
45-54	95.7	95.5	-.2
55-64	91.2	91.2	—
65 and over	74.0	72.1	-1.9
<b>Women, total</b>			
16-17	42.2	43.6	1.4
18-19	60.5	61.9	1.4
20-24	66.5	68.9	2.4
25-34	59.5	65.5	6.0
35-44	59.6	65.5	5.9
45-54	55.8	59.9	4.1
55-64	41.0	41.3	.2
65 and over	8.1	8.1	—

group in the population being analyzed contributes a single year of life to the synthetic whole. It is possible to derive group-specific estimates only if the group is closed to entry and exit. If its members remain so classified for life, the experiences of older persons can be used to derive a synthetic "future" for the young.

In the new tables, the population is subdivided by sex, race, and educational attainment. While subject to misclassification, each of these traits is normally fixed during the adult years. Sex and race are particularly stable, and beyond the mid 20's, education—especially as classified here—is also relatively fixed. Only persons who already have some advanced training are likely to continue schooling, and attainment levels, once achieved, cannot be lost. Because these groupings are closed, they satisfy the constraints of the model. And because they relate closely to labor force behavior, they are substantively meaningful controls.

The specific categories of tabulation have been dictated by sample size and population distribution. The two racial categories displayed are white (88 percent of the sample) and blacks and others (12 percent). A separate set of tables details years of schooling completed, using the categories of less than high school (about 20 percent of the sample), high school graduate to 14 years (about 52 percent of the sample), and 15 years or more (about 28 percent). At older ages, the sample of highly educated persons is very thin, particularly for women. This has made the more conventional cutoff of a college degree impossible to implement.

**Race.** Because the two components of worklife estimates, mortality and labor force behavior, are known to vary by race, the estimates themselves must also do so if appropriately tabulated. The new tables based on 1979-80 data now allow us to quantify the lifetime relationship between race and labor force involvement. As might be expected, the impact is striking, particularly for men.

Consider first the probabilities of moving into and out of the labor force. Among all men ages 16 to 64 who are outside the job market, whites are more likely to enter than are their minority counterparts. (See table 5.) Among those already in the labor force, blacks and others are the more likely to withdraw. The pool of inactive minority members is thus disproportionately large and contributes to a high incidence of labor force mobility at all ages.

The result is that minority men are estimated to average 4.3 labor force entries and 3.9 withdrawals per lifetime, while white men average 3.9 entries and 3.6 withdrawals. (See table 4.) Based on the observations for the reference period, the worklife expectancy of blacks and others was nearly 7 years shorter than that of whites (32.9 years vs. 39.8 years). Minority men spent an average of just 50 percent of their lives in labor force activity, compared with 56 percent for whites. This difference was all the more striking because whites tended to live longer, allowing them greater potential for both a longer worklife and post-retirement leisure. Far more blacks and others were likely to die before retirement (31.7 percent as against 26.7 percent for whites).

**Table 3. Changes in life and worklife expectancies by sex, selected years, and changes from 1977 to 1979-80**

Worklife model, sex, and year	Life expectancy		Worklife expectancy			Inactive years (total population)		Percent of lifespan active		Ratio of female to male worklife expectancies at age 20	
	At birth	At age 20	All persons		Workers	From birth	From age 20	From birth	From age 20		
			At birth	At age 20	At age 20						
<b>Men</b>											
Conventional model:											
1900 .....	46.3	42.2	32.1	37.8	39.4	14.2	4.4	69.3	89.6	(1)	
1940 .....	61.2	48.6	38.1	39.7	41.3	23.1	7.1	62.3	84.8	(1)	
1950 .....	65.5	48.9	41.5	41.4	43.1	24.0	7.5	63.4	84.7	(1)	
1960 .....	66.8	49.6	41.1	40.9	42.9	25.7	8.7	61.5	82.5	(1)	
Increment-decrement model:											
1970 .....	67.1	49.6	37.8	37.3	38.0	29.4	12.3	56.3	75.2	(1)	
1977 .....	69.3	51.3	37.9	36.8	37.3	31.5	14.5	54.7	71.7	(1)	
1979-80 .....	70.0	51.8	38.8	36.8	37.4	31.2	15.0	55.4	71.0	(1)	
Change, 1977 to 1979-80 .....	.7	.5	.9	.0	.1	-.3	.5	.7	-.7	(1)	
<b>Women</b>											
Conventional model:											
1900 .....	48.3	43.8	6.3	(2)	(2)	42.0	(2)	13.0	13.7	(2)	
1940 .....	65.7	50.4	12.1	11.9	(2)	53.6	38.5	18.4	23.6	30.0	
1950 .....	71.0	53.7	15.1	14.5	(2)	55.9	39.2	21.3	27.0	35.0	
1960 .....	73.1	55.7	20.1	18.6	37.3	53.0	37.1	27.5	33.4	45.0	
Increment-decrement model:											
1970 .....	74.8	56.7	22.3	21.3	22.1	52.4	35.4	29.8	37.6	57.1	
1977 .....	77.1	58.6	27.5	26.0	26.7	49.7	32.6	35.7	44.4	70.7	
1979-80 .....	77.6	59.1	29.4	27.2	27.9	48.2	31.9	37.9	46.0	73.9	
Change, 1977 to 1979-80 .....	.5	.5	1.9	1.2	1.2	-.1.5	-.7	2.2	1.6	3.2	

<sup>1</sup>Not applicable.

<sup>2</sup>Data not available.

**Table 4. Selected worklife indices by sex, 1970, 1977, and 1979-80, and by sex, race, and years of schooling completed, 1979-80**

[In years, unless otherwise indicated]

Index and age	Men									Women								
	Total			1979-80						Total			1979-80					
	1970	1977	1979-80	Race		Schooling completed				1970	1977	1979-80	Race		Schooling completed			
				White	Blacks and others	Less than high school	High school to 14 years	15 years or more	Whites				Blacks and others	Less than high school	High school to 14 years	15 years or more		
Life expectancy:																		
At birth.....	67.1	69.3	70.0	70.7	65.3	70.0	70.0	70.0	74.8	77.1	77.6	78.3	73.9	77.6	77.6	77.6	77.6	
At age 25.....	45.1	46.8	47.3	47.9	43.3	47.3	47.3	47.3	51.9	53.8	54.2	54.7	51.0	54.2	54.2	54.2	54.2	
At age 60.....	16.1	17.0	17.5	17.6	16.5	17.5	17.5	17.5	20.8	22.1	22.4	22.6	21.0	22.4	22.4	22.4	22.4	
At age 65.....	13.1	13.9	14.2	14.3	13.8	14.2	14.2	14.2	17.0	18.3	18.5	18.7	17.7	18.5	18.5	18.5	18.5	
Worklife expectancy: <sup>1</sup>																		
At birth.....	37.8	37.9	38.8	39.8	32.9	234.6	239.9	241.1	22.3	27.5	29.4	29.7	27.4	222.3	230.1	234.9		
At age 25.....	34.0	33.4	33.1	33.8	28.6	29.2	33.8	36.1	19.0	23.0	24.0	24.1	23.5	17.9	24.4	27.9		
At age 60.....	6.0	4.3	4.4	4.5	3.3	3.3	4.7	6.3	3.1	2.5	3.0	3.0	3.0	2.3	3.3	3.5		
At age 65.....	3.1	1.9	2.3	2.3	1.8	1.8	2.4	3.6	1.4	1.1	1.5	1.5	1.5	1.2	1.8	1.8		
Percent of life economically active: <sup>2</sup>																		
From birth.....	56.3	54.7	55.4	56.3	50.4	49.4	57.0	58.7	29.8	35.7	37.9	37.9	37.1	28.7	38.8	45.0		
From age 25.....	76.3	71.4	70.0	70.6	66.1	61.7	71.5	76.3	36.6	42.8	44.3	44.1	46.1	33.0	45.0	51.5		
From age 60.....	37.3	25.3	25.1	25.6	20.0	18.9	26.9	36.0	14.9	11.3	13.4	13.3	14.3	10.3	14.7	15.6		
From age 65.....	23.7	13.7	16.2	16.1	13.0	12.7	16.9	25.4	8.2	6.0	8.1	8.0	8.5	6.5	9.7	9.7		
Labor force entries per:																		
Person born.....	2.9	3.0	3.9	3.9	4.3	4.3	3.7	4.6	4.6	4.5	5.5	5.6	5.4	5.8	5.6	5.6		
Person age 25.....	1.2	1.1	1.5	1.5	1.8	2.0	1.5	1.4	2.8	2.7	3.0	3.0	3.1	3.3	3.2	2.7		
Expected duration per entry remaining:																		
From birth.....	13.0	12.6	9.9	10.2	7.7	8.0	10.8	8.9	4.8	6.1	5.3	5.3	5.1	3.8	5.4	6.2		
From age 25.....	29.4	29.1	22.1	22.5	15.9	14.6	22.5	25.8	6.8	8.6	8.0	8.0	7.6	5.4	7.6	10.3		
Voluntary exits remaining:																		
At birth.....	2.6	2.7	3.6	3.6	3.9	4.0	3.6	4.5	4.5	4.4	5.4	5.5	5.4	5.7	5.7	4.7		
At age 25.....	1.6	1.7	2.3	2.3	2.4	2.7	2.3	2.2	3.3	3.3	3.8	3.8	3.7	3.8	4.0	3.6		
Percent dying while active.....	36.3	27.0	27.4	26.7	31.7	23.0	28.6	34.0	10.8	9.5	10.4	9.7	14.6	8.0	11.2	12.4		

<sup>1</sup>Population-based index.

<sup>2</sup>Years of work expected, if this level of education is attained.

<sup>3</sup>Ratio of worklife to life expectancy at the given age.

Stated differently, although minority men could expect to spend fewer years in the labor force, their additional periods of inactivity were more likely to occur during prime working ages.

The racial differentials in worklife expectancy were less distinct for women. At most ages, it was minority rather than white women who were the more likely to enter the job market, if inactive. (See table 5.) However, they were also the more likely to withdraw from economic activity.

One apparent difference by race involved the childrearing years. Neither black nor white women showed strong tendencies to withdraw from the job market to have children. However, the data pointed toward a "fertility trough," although weak, in the labor force attachment of white women. Contradicting the patterns observed at other ages, white women in their 30's showed a stronger propensity to leave the labor force than did their minority counterparts, and those 35 to 44 showed a stronger tendency to reenter. Although the timing of midlife labor force withdrawal differed by race, estimates of lifetime entries and exits for the two groups are surprisingly similar. (See table 4.) On balance, white women averaged 2.3 more years of worklife (29.7 years vs. 27.4 years), but this is largely a reflection of their greater longevity.

**Education.** The new tables reveal a clear and direct relationship between years of schooling and duration of labor force involvement. As noted earlier, the size of the differential is probably understated. There has been no attempt to estimate the impact of education on health and survival.

The mechanism whereby education affects worklife duration is probably occupational selection. Although the link between schooling and occupation is imperfect, many occupations are closed to persons who have not met minimum educational requirements. Therefore, breaking the population into three educational strata effectively breaks it into clusters of occupations for which certain levels of training may be necessary.

The new tables reveal a decided employment "payoff" for time spent in school. During the prime working ages, men with 15 or more years of schooling are roughly half as likely to leave the job market, if active, as are those without high school diplomas. (See table 4.) If inactive, their probability of labor force entry is approximately twice that of the least educated group. Over a lifetime, the most educated class of men averages slightly more entries and exits than do those without high school diplomas, but most of this turnover occurs relatively early, while many individuals are still in school. After age 25, these men can

**Table 5. Rates of labor force accession and separation per 1,000 persons at risk, by sex, race, and years of schooling completed, 1979-80**

Age	Men						Women					
	Total	Race		Years of schooling completed			Total	Race		Years of schooling completed		
		White	Black and other	Less than high school	High school to 14 years	15 years or more		White	Black and other	Less than high school	High school to 14 years	15 years or more
<b>Labor force accessions per 1,000 inactive men</b>						<b>Labor force accessions per 1,000 inactive women</b>						
16-19	596.1	620.1	525.8	506.0	—	—	527.5	564.1	409.3	425.4	—	—
20-24	666.4	672.6	649.0	511.2	719.2	685.2	454.8	457.5	462.1	320.1	457.4	568.7
25-29	681.4	693.1	646.8	477.2	721.9	783.3	341.8	334.1	397.6	268.3	342.7	422.0
30-34	547.1	558.1	520.6	330.1	568.3	802.2	292.3	289.3	320.0	229.8	303.3	319.3
35-39	407.1	444.3	306.9	271.9	403.0	757.2	271.3	274.7	248.0	185.0	287.3	330.2
40-44	297.8	327.9	208.7	235.1	285.6	539.1	221.7	226.3	189.1	149.0	237.2	287.3
45-49	217.7	218.5	213.2	172.8	233.2	350.6	164.1	163.9	165.1	136.2	170.4	199.8
50-54	168.8	175.0	138.8	123.3	213.3	260.9	122.7	120.4	141.7	102.4	127.4	155.3
55-59	120.9	129.0	75.1	93.4	142.8	174.5	81.1	79.0	100.3	67.8	85.8	99.6
60-64	88.6	92.0	62.9	81.4	93.7	103.8	56.4	55.0	68.7	48.4	64.0	55.4
65-69	75.3	75.1	76.4	68.5	78.7	95.6	41.8	40.9	50.1	37.7	47.9	38.5
70-74	52.0	51.8	54.5	51.9	50.2	54.0	33.3	33.9	27.1	29.7	38.9	36.2
75 and over	3.9	4.2	1.0	4.7	3.7	1.2	3.1	3.2	2.2	2.6	4.1	3.7
<b>Labor force separations per 1,000 active men</b>						<b>Labor force separations per 1,000 active women</b>						
16-19	277.6	262.9	429.2	277.6	—	—	354.8	335.6	523.2	436.5	—	—
20-24	120.8	112.5	186.3	143.9	107.5	170.4	227.6	218.8	289.8	360.5	228.1	190.7
25-29	56.6	52.6	89.8	90.9	50.9	60.1	183.8	184.0	184.4	300.3	191.9	153.3
30-34	36.7	33.5	65.0	58.4	38.8	30.9	154.5	157.0	140.7	247.3	160.3	121.4
35-39	30.0	27.7	52.0	52.4	30.0	21.8	128.5	129.1	124.8	190.0	133.0	94.9
40-44	30.8	28.6	49.7	51.3	27.3	25.0	111.2	109.8	119.8	157.1	114.4	78.3
45-49	36.5	34.1	56.1	50.4	35.0	28.3	109.7	109.1	112.8	145.8	114.3	70.5
50-54	50.1	48.3	66.8	69.2	48.4	36.4	114.7	113.8	122.6	153.2	111.6	86.5
55-59	98.9	96.3	127.2	133.6	91.8	71.2	151.5	149.9	166.1	192.0	140.0	139.3
60-64	232.5	227.5	286.5	295.3	225.6	160.8	253.5	252.4	262.8	275.8	249.4	238.6
65-69	337.9	332.4	386.7	405.0	325.2	246.2	339.4	333.2	393.9	352.3	335.4	322.7
70-74	381.8	380.3	374.2	443.1	367.6	277.2	384.5	377.4	428.0	417.1	380.3	317.4
75 and over	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0	1000.0

anticipate fewer transitions in either direction.

Over a lifetime, the average man with 15 years of schooling or more can expect to work 6.5 years longer than his classmate who left high school before graduation (41.1 vs. 34.6). The same increment to education will have twice as much impact on the worklife duration of a woman, adding an average of 12.6 years to her economically active life (34.9 vs. 22.3 years).

Table 6 isolates the impact of education during three periods of the worklife cycle: the early and middle phases and the preretirement years. It displays the number of years the average person can be expected to work during each such phase, by sex and years of schooling completed.

At younger ages, education has a two-pronged effect on men: While failure to earn a high school diploma costs the individual about a year and a half of worklife between the ages of 20 and 39, remaining in school also imposes a cost in terms of forgone employment opportunities. However, among the group ages 40 to 59, the payoff from education is very evident. Those completing 15 years of school or more can expect to work 1 year longer than high school graduates, and 3 years longer than those who did not graduate. Even though higher education, with its greater compensation returns, may ease the financial strain of retirement, it seems to engender a sense of "career commitment" in many men which holds them in the labor force. (This is

evident in the separation rates in table 5.) Examples of this phenomenon include self-employed career professionals such as attorneys and physicians, who are reputed to remain active long after most wage and salary workers have retired. An additional effect of schooling seems to be that—among those who have "retired," at least in terms of their principal job—the most educated are the most likely to return to work in some capacity, as reflected in accession rates. Finally, if educational attainment is positively correlated with good health and longevity, untreated health problems may discourage economic activity among the least educated, least

**Table 6. Worklife expectancy of the population between specific ages,<sup>1</sup> by sex and years of schooling completed, 1979-80**

Sex and years of schooling completed	Age		
	20 to 39	40 to 59	60 and over
Men, total	17.6	16.3	4.4
Less than high school	16.0	14.5	3.4
High school to 14 years	17.9	16.6	4.7
15 years or more	17.6	17.5	6.3
Women, total	13.1	11.6	3.0
Less than high school	9.5	8.8	2.3
High school to 14 years	13.1	11.8	3.4
15 years or more	14.0	14.7	3.5

<sup>1</sup>Computed using the difference in workyears remaining at ages 20, 40, and 60, divided by survivors to each initial age.

affluent groups, further widening the worklife gap associated with schooling. Thus, in the final phase of the work cycle, the most educated group remain active 1.6 years longer than high school graduates and 3 years longer than those who never finished high school.

The work patterns of women vary more widely than those of men. Consequently, education has a stronger potential impact on female worklife behavior than on that of males. The new tables show this effect to be the greatest during the prime working ages. Between the ages of 20 and 39, women face fundamental tradeoffs among schooling, child-rearing, and employment. The opportunity costs of child-rearing increase with job skills. During this phase of life, the woman with 15 years of schooling or more is likely to work nearly a year longer than the high school graduate, and 4.5 years longer than her classmate who left high school early. The differential remains, and in fact widens, throughout midlife. During the next 20 years of her life cycle, the highly educated woman is likely to work 2.9 years longer than the high school graduate, and 5.9 years longer than the nongraduate. The tables suggest that the relationship between education and retirement patterns is looser for women than for men. As with men, the most educated show the least inclination to retire early. (See table 5.) However, once they have done so, these women are less likely than men with comparable training to reverse their decision. (As evidence, compare accession rates of the most educated men and women in table 5.)

## Conclusions

This latest worklife study, based on a larger sample of individuals than had been used previously, has enabled us

to examine two new dimensions of worklife behavior. It has also provided more complete measures of movement into and out of the labor force than were previously possible.

During the period between 1977 and 1979-80, the worklife expectancy of adult men held relatively steady, while that of women continued to edge upward. For both sexes, there were indications that many retirement decisions were being reversed. However, because the model does not measure hours of labor force involvement, the workyears remaining to older persons may in fact be less "intense" now than they were at the beginning of the decade.

Race seems to have more bearing on the worklife patterns of men than of women. The tables confirmed that minority men are both more likely to leave the labor force and less likely to reenter than are whites. The racial differential for women affects timing of movement more than it does overall volume.

The more important factor affecting worklife patterns of women is educational attainment. Using the categories displayed here, we find that women appear to reap twice as much "payoff" from additional schooling as do men. Their additional training appears to drive up the opportunity costs of alternative activities, encouraging longer and more continuous careers for those who have pursued higher education.

Opportunity costs also appear to play an important role in the retirement process. For both sexes, higher education is associated with later retirement. Among the men who do retire, the most educated are most prone to reenter the work force. The swifter, more permanent retirement pattern of persons without high school diplomas may be due, in part, to health differentials by educational attainment, mentioned but not fully controlled for in this study. □

## FOOTNOTES

<sup>1</sup> See Shirley J. Smith, "New worklife estimates reflect changing profile of labor force," *Monthly Labor Review*, March 1982, pp. 15-20; Shirley J. Smith, *Tables of Working Life: The Increment-Decrement Model*, Bulletin 2135 (Bureau of Labor Statistics, 1982); and Shirley J. Smith, *New Worklife Estimates*, Bulletin 2157 (Bureau of Labor Statistics, 1982).

<sup>2</sup> See David M. Nelson, "The use of worklife tables in estimates of lost earning capacity," *Monthly Labor Review*, April 1983, pp. 30-31; John L. Finch, "Worklife estimates should be consistent with known labor force participation," *Monthly Labor Review*, June 1982, pp. 34-36; Kenneth J. Boudreaux, "A further adjustment needed to estimate lost earning capacity," *Monthly Labor Review*, October 1983, pp. 30-31; and George C. Alter and William E. Becker, "Estimating lost future earnings using the new worklife tables," *Monthly Labor Review*, February 1985, pp. 39-42.

<sup>3</sup> We now estimate David Nelson's index of median years to final retirement. Following a suggestion by George Alter and William Becker, we also make assumptions of retirement beyond age 75 explicit. It is assumed that no one enters the labor force after age 75, and that remaining years of activity are proportional to the labor force participation rates of CPS respondents, age 76 to 78.

<sup>4</sup> The sample for 1979 included 56,000 potential households. It was

temporarily expanded to 65,000 households in 1980, and now contains a potential of 60,000 units.

<sup>5</sup> Because many respondents appear in more than one of these monthly matches, the number of individuals included in the pooled sample is considerably less than 255,000.

<sup>6</sup> The multistate model is equipped to deal with a variety of different "transitions" simultaneously. It could incorporate data on moves between occupations, if those data were reliable. However, interoccupational mobility has proven difficult to measure accurately, and the number of categories involved would hopelessly fragment the sample. We hope eventually to develop a few occupational clusters, characterized by unique behavioral patterns. Only in this way can the model realistically control for occupation.

<sup>7</sup> National Center for Health Statistics, *Vital Statistics of the United States, 1979*, vol. II, section 6, "Life Tables," DHHS Publication No. (PHS)84-1101 (U.S. Government Printing Office, 1984); National Center for Health Statistics, *Vital Statistics of the United States, 1980*, vol. II, section 6, "Life Tables," DHHS Publication No. (PHS)84-1104 (U.S. Government Printing Office, 1984); and unpublished tables from the National Center for Health Statistics, Public Health Service.

<sup>8</sup> The internal calculations of the model now begin at age 13, when by definition all persons are outside the labor force. Entries and exits at 14 and 15 are recorded to yield a more complete count of the labor force at

exact age 16. This increased precision has had a minor impact on estimates of worklife values at birth and in the early teens, but the effect is imperceptible at later ages.

<sup>9</sup> Shirley J. Smith, "Labor force participation rates are not the relevant factor," *Monthly Labor Review*, June 1983, pp. 36-38.

<sup>10</sup> Although it would be useful to examine changes in the labor force entry and exit rates of older persons to learn more about the retirement process, the expanded sample has rendered such comparisons impossible.

It captures far more gross movement than was evident in earlier tables. For all men, the 1977 study indicated an average of 3.0 labor force entries per lifetime; the 1979-80 tables set this average at 3.9. The earlier tables indicated an average of 2.7 voluntary withdrawals, while this set shows a figure of 3.6. The picture for women is quite similar. Lifetime entries were estimated at 4.5 in 1977. With the more sensitive modified sample, the estimate for 1979-80 was 5.5. Voluntary withdrawals were estimated at 4.4 per lifetime in 1977, 5.4 at the end of the decade.