

# Earnings Replacement Rates of New Retired Workers

by Susan Grad\*

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This article presents replacement rates based on actual earnings for persons first receiving Social Security retired-worker benefits in the early 1980's. One of the advantages of actual earnings replacement rates is that they reflect the complexities of real-life workers. Because there is no well-established procedure to calculate actual rates, several alternative definitions are used to show the range of possible figures based on reasonable starting assumptions. This analysis demonstrates that actual earnings replacement rates vary greatly depending on how they are measured and on the employment earnings patterns over the worker's entire career and during the last few years of the worker's career. For this reason, it is difficult to point to one summary measure of replacement rates based on actual earnings.

Replacement rates based on earnings in both the 5 years of highest earnings and the last 5 years before benefit receipt converged when quarters of coverage in the last 5 years were near the maximum possible, when work on the last job was full time rather than part time, and when the earnings in the last 5 years were close to the 5 years of highest earnings. However, most retirees had gaps in earnings or declining earnings during the last 5 years before benefit receipt and, in some cases, last earnings replacement rates were several times higher than highest earnings rates.

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One objective of the Social Security program is to replace part of the covered earnings lost by families because of the death, disability, or retirement of insured workers. Replacement rates, which are ratios of benefits to preretirement earnings, are used to inform worker of how much they can expect to receive from the Social Security program relative to their earnings and as a measure of how well the program is meeting the needs of its beneficiaries.

Replacement rates can be calculated based on hypothetical or actual earnings. A common hypothetical procedure constructs a lifetime earnings pattern using a particular level of wages, then calculates the ratio of benefits derived from this wage history to earnings in the last year before claiming benefits. Social Security Administration (SSA) actuaries routinely calculate hypothetical replacement rates for low, average, and high wage earners retiring at various ages. Calculating hypothetical rates is relatively easy and the results can be used to determine change in replacement rates over time, why the change occurred, and the effects of proposed program changes.

Replacement rates based on actual earnings histories have been calculated by SSA on only a few occasions—by Fox for retired

workers<sup>1</sup> and by Muller and Lando for disabled workers.<sup>2</sup> The major advantage of these “actual” replacement rates is that they reflect the complexities of real-life workers and the differences among various groups of beneficiaries. Actual rates can also be calculated more broadly to include total retirement benefits (the sum of employer pensions and Social Security benefits) and calculated for married couples as well as for workers only. However, these actual rates are difficult to interpret because they can be measured in many ways, and there is no consensus on how to measure them. It is also difficult to compare actual earnings replacement rates

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<sup>1</sup> See Alan Fox, “Alternative Measures of Earnings Replacement for Social Security Benefits,” in **Reaching Retirement Age: Findings From a Survey of Newly Entitled Workers, 1968-70** (Research Report No. 47), Office of Research and Statistics, Social Security Administration, 1976; Alan Fox, “Earnings Replacement Rates of Retired Couples: Findings From the Retirement History Study,” **Social Security Bulletin**, January 1979, pages 17-48; Alan Fox, “Earnings Replacement Rates and Total Income: Findings From the Retirement History Study,” **Social Security Bulletin**, October 1982, pages 3-23.

<sup>2</sup> L. Scott Muller and Mordechai E. Lando, **Replacement of Earnings of the Disabled Under Social Security: Levels & Trends 1969-75** (Research Report No. 53), Office of Research and Statistics, Office of Policy, Social Security Administration, 1980.

across studies because of differences in the data and definitions used. (These differences are discussed in the Technical Appendix.) And, actual rates cannot be calculated for persons who have no earnings in the chosen preretirement period.

This article reports actual earnings replacement rates for a sample of persons who first received retired-worker benefits in the early 1980's. The goal of this study is to create a representative measure for the population as a whole, including persons with different retirement patterns: working full time until retirement, making the transition from work to retirement by working part time, or stopping work several years before receipt of retirement benefits.

One issue is whether to use highest earnings (as is done in many formulas for calculating employer pension amounts), recent earnings (which would approximate short-term changes in standard of living, assuming that earnings were the major source of income before claiming benefits), or some combination of the two. Another issue is what period to use in the calculation: the last year, the last several years, or the entire career.

In this article, the earnings used as the denominator in the replacement rate calculations are measured in two ways: The average of the 5 years of highest earnings over the career—highest

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earnings—and the average earnings during the last 5 years before benefit receipt—last earnings. The percentage of earnings replaced by Social Security benefits and by Social Security benefits plus employer pensions are calculated for workers and also for married couples. Replacement rates are shown separately for men and women because they had very different work careers. Thus, a total of 16 replacement rates are calculated. Many other alternative measures could have been chosen. However, the differences among these measures of replacement rates suggest a range within which replacement rates defined in various ways may lie.

## Structure of Social Security Program

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To understand why earnings replacement rates vary for beneficiaries with different circumstances it is important to understand some key elements in the design of the Social Security system: the weighted benefit formula, the taxable maximum amount, spousal benefits and dual entitlement, and adjustments in benefit amounts for late or early retirement.

First, the benefit formula is weighted to replace a higher portion of lower paid workers' earnings than of higher paid workers earnings (though workers with higher average career earnings will always receive higher benefits). In 1990, for example, the basic benefit formula replaces 90 percent of the first \$356 of average wage-indexed monthly earnings (AIME) plus 32 percent of the next \$1,789, and 15

percent of earnings above \$2,145.<sup>3</sup> Those persons with fewer than the required number of years of earnings for the benefit calculation will have some zeros averaged into their AIME.

Second, only earnings up to a set amount are taxed and included in the benefit calculation. In 1990, this taxable maximum amount is \$51,300. In the early years of the program, the taxable maximum was much lower and changed only occasionally. Since 1974, the taxable maximum amount has been adjusted annually by an index tied to changes in average wages.

Hypothetical replacement rates take into account only earnings up to the taxable maximum amount because the program is intended to replace only those earnings. However, both the higher weighting of lower earnings in the formula and the ceiling on taxable earnings are intended to encourage higher earners to save and to supplement their Social Security benefits with employer pensions. Because one reason for calculating actual earnings replacement rates is to provide information not already obtained from hypothetical replacement rates, an estimate of total earnings is used here as the measure of preretirement earnings, and pension income is taken into account.

Third, the spouse (almost always the wife) receives a Social Security benefit equal to approximately one-half of the worker's benefit amount if she has not worked or has not worked long enough to become

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<sup>3</sup>Wage indexing of earnings in the benefit calculation was introduced in the 1977 Amendments to the Social Security Act. Persons attaining age 62 before 1979 had their benefits calculated based on unindexed earnings.

insured on the basis of her own earnings. When a spouse is also entitled to a benefit as a worker, and her spousal benefit is larger than her own retired-worker benefit, she is "dually entitled" and receives the larger amount. For couples, combined earnings before retirement and combined benefits in retirement are used to calculate replacement rates.

Fourth, full retired-worker benefits are payable at age 65. Benefits are available as early as age 62, reduced by 5/9 of 1 percent for each month of benefit receipt before age 65. The maximum reduction is therefore 20 percent. Benefits before 1982 were increased 1/12 of 1 percent for each month from age 65 through age 71 that benefits were not received. Thus, age at benefit receipt will also affect earnings replacement rates.

## Data Base and Analysis Plan

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Replacement rates in this article are derived from the New Beneficiary Survey (NBS) conducted by the Social Security Administration in 1982. This survey includes interviews with more than 17,000 persons who first received various types of Social Security benefits between mid-1980 and mid-1981. The survey data are matched with data from SSA's Master Beneficiary Record (MBR) and the Summary Earnings Record (SER) for both respondents and their spouses. Replacement rates are calculated for new retired-worker men and women aged 62 or older.

The findings in this article are organized as follows: Rates of replacement of highest earnings with Social Security benefits are first examined for retired workers by

worklife characteristics that affect benefit levels. Work characteristics of the career and the last 5 years before benefit receipt are then reviewed before comparing last-earnings replacement rates with highest-earnings rates. This discussion is followed by a comparison of replacement rates, when including and excluding employer pensions, and a comparison of couple and worker replacement rates for married retired workers.

The worklife characteristics used in this study are:

- Levels of preretirement earnings. Levels of earnings were measured by quartiles of earnings in the 5 years of highest earnings and in the last 5 years before benefit receipt. Earnings levels were calculated separately for men and women.<sup>4</sup> For both measures, only earnings before claiming benefits were used. Earnings for the replacement rate calculation were wage indexed to the year of first benefit receipt. Average highest and last earnings included years with zero earnings. However, those persons with no covered earnings since 1950 or in the last 5 years before benefit receipt were excluded from the respective replacement rate calculations. The Technical Appendix contains more details about these measures.

- Length of worklife. The length of worklife was measured by quartiles of quarters of coverage from 1951 to the year before first benefit receipt.<sup>5</sup>
- Age at benefit receipt. Ages were 62, the earliest age at which benefits are available; 63-64 before full benefits are available; 65 when full benefits are available; and 66 or older when benefits are increased by the delayed retirement credit.

### Retired-Worker Replacement Rates

#### Highest-Earnings Replacement Rates

The median highest-earnings replacement rate was between one-fourth and one-third. Women had a somewhat higher median replacement rate than men—31 percent, compared with 26 percent (table 1). In general, the higher the earnings, the lower the median replacement rate. This lower rate is what one would expect given the progressivity in the benefit formula. Men with the highest earnings had median replacement rates of about 18 percent, compared with about 31 percent for the lowest earners. The comparable replacement rates for women were 27 percent and 38 percent, respectively. Career length had no effect on

**Table 1.—Median highest-earnings replacement rates, by quartiles of highest earnings, quartiles of career quarters of coverage, and sex<sup>1</sup>**

Quartiles	Men	Women
<b>Highest earnings</b>		
Total .....	26	31
1 .....	31	38
2 .....	28	30
3 .....	25	30
4 .....	18	27
<b>Career quarters of coverage<sup>2</sup></b>		
Total .....	26	31
1 .....	25	28
2 .....	26	29
3 .....	26	31
4 .....	25	34

<sup>1</sup> Persons for whom highest-earnings replacement rates were calculated. See Technical Appendix.

<sup>2</sup> Quarters of coverage refer to those earned from 1951 through the year before benefit receipt.

men's replacement rates. This finding is not surprising because their quartile cutoffs (92, 112, and 117 quarters of coverage) indicate very little variation in career length. Furthermore, the benefit formula allows for the 5 years of lowest earnings from 1951 to benefit entitlement to be dropped. Therefore, only those with fewer than 100 quarters of covered earnings out of a maximum of 120 will experience any reduction in benefits from a gap in earnings.

Women in the highest quartile of career quarters of coverage did have slightly higher replacement rates than those in the lowest quartile—34 percent, compared with 28 percent. This slightly higher rate was perhaps a smaller difference than might be expected, considering that women had so much more variation in career length (quartile cutoffs of 41, 68, and 98 quarters of coverage).

<sup>5</sup> A quarter of coverage before 1978 was a calendar quarter in which at least a specified minimum amount was earned in employment covered by the Social Security program. As of 1978, a quarter of coverage is a specified amount earned in covered employment during a calendar year, up to a maximum of four per year. The quartile cutoffs for quarters of coverage were 92, 112, and 117 for men and 41, 68, and 98 for women, out of a maximum of 120 quarters of coverage.

<sup>4</sup> The quartile cutoffs for highest earnings in 1982 dollars were \$18,549, \$24,989, and \$31,042 for men and \$7,803, \$11,808, and \$16,624 for women. Cutoffs for last earnings were \$11,182, \$18,546, and \$26,292 for men and \$5,254, \$9,395, and \$14,204 for women. The 1982 annualized minimum wage was \$7,000, average covered wages were \$14,531, and the taxable maximum amount was \$32,000.

However, the New Beneficiary Survey has data only on quarters of coverage earned after 1950, whereas the benefit formula can include quarters earned before 1951, if benefits increase as a result. Many in the NBS sample were in their thirties by 1951, and they could have acquired additional quarters of coverage before 1951 that are not included in the NBS data. This possible undercount of quarters of coverage may have affected the size of the apparent relationship between career length and replacement rates.

Median replacement rates were 22-30 percent for men and 28-40 percent for women retiring at ages 62-66 or older (table 2). Median benefit amounts for those aged 62 at benefit receipt were only 75 percent of the amounts for those aged 63-64, in part because of the benefit reduction for early retirement. At least 75 percent of those claiming benefits at age 62 received them within 1-2 months of age 62, and about 40 percent of the group aged 63-64 when claiming benefits were within 3-4 months of age 65 (table 3). The youngest retirees (especially women) also had lower earnings and fewer career quarters of coverage than older retirees, yielding lower base benefits that then were subject to a greater reduction for earlier retirement.

### Work Careers

Hypothetical replacement rates assume an earnings history with the same relative level of earnings throughout the work career—that is, the minimum wage, national average earnings, or taxable maximum earnings. The stereotypical career path involves

**Table 2.—Median highest-earnings replacement rates, benefit amounts, and worklife characteristics by age and sex<sup>1</sup>**

Age at benefit receipt and sex	Replacement rates	Social Security	Highest earnings	Quarters of coverage <sup>2</sup>
<b>Men</b>				
62 .....	22	\$5,411	\$23,481	107
63-64 .....	29	7,108	24,286	113
65 .....	31	8,428	27,077	113
66 or older .....	30	9,255	28,851	113
<b>Women</b>				
62 .....	28	2,691	10,652	61
63-64 .....	37	4,840	13,065	84
65 .....	40	6,007	15,111	85
66 or older .....	40	6,375	15,742	75

<sup>1</sup> Persons for whom highest-earnings replacement rates were calculated. See Technical Appendix.

<sup>2</sup> Quarters of coverage refer to those earned from 1951 through the year before benefit receipt.

**Table 3.—Percentage distribution of months of age for those aged 62 and 63-64 at receipt of Social Security benefits, by sex<sup>1</sup>**

Months of age at benefit receipt	Men aged—		Women aged—	
	62	63-64	62	63-64
Total number .....	306,870	182,553	310,825	107,036
Total percent .....	100	100	100	100
744 .....	60	0	74	0
745 .....	11	0	5	0
746 .....	5	0	3	0
747-755 .....	25	0	18	0
756-775 .....	0	60	0	57
776 .....	0	7	0	7
777 .....	0	11	0	13
778 .....	0	11	0	10
779 .....	0	12	0	13

<sup>1</sup> Persons for whom highest-earnings replacement rates were calculated. See Technical Appendix.

low starting earnings and rising earnings over most of the career, so that earnings near retirement are higher than average. Actual earnings over the career and in the last 5 years before benefit receipt often followed neither of these patterns.

Only 13 percent of the men and 21 percent of the women fitted the stereotypical pattern and earned all

of their highest earnings late in their careers (within 10 years of benefit receipt). The majority of men and half the women earned only some of their highest earnings in the 10 years before benefit receipt. About one-third of the men and women fitted neither the hypothetical nor the stereotypical models and earned all of their highest earnings at least 10 years before benefit receipt (table 4).

**Table 4.—Percentage distribution of years of highest earnings, by sex<sup>1</sup>**

Years of highest earnings	Men	Women
Total number.....	659,847	488,067
Total percent.....	100	100
All in 1971 or later.....	13	21
Some in 1971 or later....	55	49
All before 1971.....	32	30

<sup>1</sup> Persons for whom highest-earnings replacement rates were calculated. See Technical Appendix.

The clear majority of men and women had last earnings that were less than 75 percent of their highest earnings (referred to as nonpeak earnings in table 5). Why aren't last earnings the highest earnings for many workers? Many persons had less than full coverage during the 5 years before benefit receipt. For 27 percent of the men and 48 percent of the women, this period included at least four calendar quarters with little or no covered earnings and 9 percent of the men and 23 percent of women had no quarters of coverage in the last 5 years, as noted above. Such gaps in covered earnings will certainly lower the measure of preretirement earnings based on the 5 years before benefit receipt. Working part time (especially if one had worked full time) will also result in earnings just before retirement being lower than highest earnings. Twenty percent of the men and 32 percent of the women worked part time on the last job before Social Security benefit receipt. Altogether, 40 percent of the men and 64 percent of the women had either gaps in covered earnings or part-time work just before benefit receipt.

The association between lower-than-maximum last earnings and either gaps in covered earnings or part-time work is also shown in table 5. One-fourth of the men with nonpeak last earnings (compared with only about one-half that

proportion with peak last earnings) had been working part time on their last jobs. Forty-four percent of the men who had nonpeak last earnings (compared with only 3 percent with peak earnings) had gaps in covered earnings. Altogether, 58 percent of the men with nonpeak last earnings (compared with only 16 percent with peak earnings) had either a gap in covered earnings or were working part time on the last job. The remaining 42 percent with nonpeak last earnings may have changed to lower paying jobs. Altogether, 88 percent of the women with nonpeak last earnings, compared with 29 percent with peak earnings, had either a gap in covered earnings or part-time work on the last job.

#### Last-Earnings Replacement Rates

Last-earnings replacement rates were considerably higher, on average, than highest-earnings rates (a median of 40 percent, compared with 28 percent). Not surprisingly, the two measures tended to converge the later the highest earnings were earned, when no gaps in coverage occurred in the

last 5 years before benefit receipt, when the last job before benefit receipt was full year full time, or when last earnings were peak earnings (table 6). For those at the high end of these dimensions, the two rates were about the same—about 29 percent for men and 35 percent for women. For those at the low end, the median last-earnings replacement rate was almost four times higher than the highest-earnings rate (83 percent, compared with 23 percent for men; 129 percent, compared with 28 percent for women).

#### Multivariate Analysis

Which of the worklife characteristics mattered most? A modest 28 percent of the variation in highest-earnings replacement rates was explained by all four variables discussed above—the level of highest earnings, the number of career quarters of coverage, age at benefit receipt, and sex (table 7). Highest earnings alone explained the largest share of variation—19 percent. The age at first benefit receipt was the next most important factor. No additional

**Table 5.—Percent with an earnings gap in last 5 years or part-time work on the last job, by level of last earnings and sex<sup>1</sup>**

Work in last 5 years before benefit receipt	Level of last earnings					
	Men			Women		
	Total	Peak <sup>2</sup>	Nonpeak	Total	Peak <sup>2</sup>	Nonpeak
Total number.....	659,847	281,599	378,248	488,067	201,198	286,868
Percent with—						
Earnings gap or part-time work.....	40	16	58	64	29	88
Earnings gap <sup>3</sup> .....	27	3	44	48	7	78
Part-time work <sup>4</sup> .....	20	14	25	32	25	36

<sup>1</sup> Persons for whom highest-earnings replacement rates were calculated. See Technical Appendix.

<sup>2</sup> Last earnings that were 75 percent or more of highest earnings.

<sup>3</sup> At least four quarters in the 5 years before benefit receipt with no covered earnings.

<sup>4</sup> Part time or part year on last job.

**Table 6.—Median highest- and last-earnings replacement rates, by worklife characteristics and sex<sup>1</sup>**

Worklife characteristics	Men		Women	
	Highest earnings	Last earnings	Highest earnings	Last earnings
Years of highest earnings:				
All in 1971 or later.....	28	31	34	37
Some in 1971 or later.....	26	36	32	45
All before 1971.....	24	48	27	64
Quarters of coverage in last 5 years:				
20.....	27	35	34	40
Less than 20.....	23	54	28	63
Extent of work on last job:				
Full year, full time.....	25	36	30	42
Part year or part time.....	26	45	32	52
Level of last earnings:				
Peak <sup>2</sup> .....	29	33	35	39
Nonpeak.....	23	46	27	63
All in 1971 or later, 20 quarters of coverage, full year, full time on last job and nonpeak last earnings.....	29	30	35	36
All before 1971, fewer than 20 quarters of coverage, part time on last job and nonpeak last earnings.....	23	83	28	129

<sup>1</sup> Persons for whom the respective replacement rates were calculated. See Technical Appendix.

<sup>2</sup> Last earnings that were 75 percent or more of highest earnings.

variation was explained by either career quarters of coverage or sex.

Only 5 percent of the variation in last-earnings replacement rates was explained by the level of earnings in the 5 years before benefit receipt, the number of quarters of coverage in the 5 years before benefit receipt, age at benefit receipt, and sex—and virtually all of it by quarters of coverage alone. Thus, little or no relationship was found between factors associated with the last few years of work and the size of last-earnings replacement rates, but a much stronger correspondence was found between worklife characteristics and highest-earnings replacement rates. This relationship is not surprising given the fact that the benefits are based

on career average earnings. As expected, sex had no effect over and above the effects of the worklife characteristics.

### Rates With and Without Employer Pensions

Forty-four percent of the men and 26 percent of the women had pensions (table 8). The rate of pension receipt was greater for high than low earners—about one-half to two-thirds of those in the highest quartile, compared with about 20 percent or less in the lowest quartile. As discussed above, higher earners (especially the men) replaced less of their preretirement earnings with Social Security benefits than did low earners. When employer pensions were added to calculate a "total replacement rate," less variance

was found across highest-earnings quartiles. Nevertheless, total replacement rates based on last earnings were still considerably lower for those with relatively high earnings (40-47 percent at the highest quartile, compared with 72 percent for men and 94 percent for women at the lowest quartile).

Median total replacement rates for workers with employer pensions averaged 42-48 percent based on highest earnings and 56-59 percent based on last earnings (table 9). Pensions increased replacement rates, on average, by nearly 75 percent for men and 50 percent for women who received them. Workers with pensions had highest-earnings replacement rates more than 50 percent higher than those who relied on Social Security benefits alone, and last-earnings

**Table 7.—Stepwise regressions of worklife characteristics on highest- and last-earnings replacement rates**

Models	R square	Significance
<b>Highest earnings</b>		
Best 1-variable model....	0.19	---
Highest-earnings.....	---	0.0001
Best-2 variable model....	.28	---
Highest earnings.....	---	.0001
Age (in months) at benefit receipt.....	---	.0001
Four-variable model....	.28	---
Highest earnings.....	---	.0001
Age (in months) at benefit receipt.....	---	.0001
Career quarters of coverage.....	---	.0001
Sex.....	---	.53
<b>Last earnings</b>		
Best 1-variable model....	.05	---
Last quarters of coverage.....	---	.0001
Four-variable model....	.05	---
Last quarters of coverage.....	---	.0001
Last earnings.....	---	.06
Age (in months) at benefit receipt.....	---	.63
Sex.....	---	.73

**Table 8.—Replacement rates with and without employer pensions, based on highest and last earnings, and percent with employer pensions, by quartiles of earnings and sex<sup>1</sup>**

Replacement rates, pension receipt, and sex	Total	Quartiles of earnings			
		1	2	3	4
<b>Men</b>					
Highest earnings:					
Median total rate.....	33	34	34	34	27
Median Social Security rate.....	26	31	28	25	18
Percent with employer pensions.....	44	16	41	57	63
Last earnings:					
Median total rate.....	50	72	50	45	40
Median Social Security rate.....	38	67	42	34	25
Percent with employer pensions.....	44	22	43	60	66
<b>Women</b>					
Highest earnings:					
Median total rate.....	34	39	31	34	35
Median Social Security rate.....	31	38	30	30	27
Percent with employer pensions.....	26	5	15	34	54
Last earnings:					
Median total rate.....	52	94	47	47	47
Median Social Security rate.....	44	89	45	41	35
Percent with employer pensions.....	26	10	20	42	63

<sup>1</sup> Persons for whom the respective replacement rates were calculated. See Technical Appendix.

replacement rates were about 25-30 percent higher.

Economists have evaluated the adequacy of retirement benefits based on hypothetical replacement rates.<sup>6</sup> Schulz has estimated that middle-income workers could maintain their previous standard of living, when the reduced needs in retirement are taken into account, with about two-thirds of previous gross income.<sup>7</sup> Using this as a benchmark, Social Security benefits

and pensions alone rarely prevent a decline from highest-earnings living standards. Only 6-8 percent of new retired workers replaced at least

two-thirds of their highest earnings. Retirement benefits do a better job of replacing last earnings: 23-30 percent of retired workers replaced two-thirds of their last earnings (table 10). Munnell, in a more recent analysis, estimated an alternative, more complete set of need ratios. Rather than assuming that two-thirds of previous earnings were needed to maintain one's standard of living, Munnell's ratios ranged from 80 percent down to 50 percent, depending on levels of preretirement income.<sup>8</sup> The percentages of retired workers maintaining their previous standard of living by both the Munnell and Schulz benchmarks were the same.

#### Couple Replacement Rates

A retired couple is defined here as one in which both spouses had begun receiving Social Security benefits. Couple replacement rates were calculated as of the year the

<sup>8</sup> Alicia H. Munnell, *The Economics of Private Pensions*, Washington, DC, The Brookings Institution, 1982.

**Table 9.—Replacement rates and ratios of total to Social Security rates based on highest and last earnings for those with and without employer pensions, by sex<sup>1</sup>**

Replacement rates	Men		Women	
	With employer pensions	No employer pensions	With employer pensions	No employer pensions
Highest earnings:				
Median total rate.....	42	27	48	30
Median Social Security rate.....	24	27	32	30
Ratio as a percent <sup>2</sup> .....	173	100	145	100
Last earnings:				
Median total rate.....	56	43	59	48
Median Social Security rate.....	33	43	40	48
Ratio as a percent <sup>2</sup> .....	170	100	144	100

<sup>1</sup> Persons for whom the respective replacement rates were calculated. See Technical Appendix.

<sup>2</sup> Medians of individual ratios of total to Social Security replacement rates.

<sup>6</sup> For two views on adequacy see Martin Feldstein, "Facing the Social Security Crisis," *The Public Interest*, Spring 1977, pages 88-100 and James H. Schulz, *The Economics of Aging*, fourth edition, Dover, MA, Auburn House Publishing Co., 1988, pages 140-144.

<sup>7</sup> James H. Schulz and others, *Providing Adequate Retirement Income—Pension Reform in the United States and Abroad*, Hanover, NH, New England Press for Brandeis University Press, 1974.



**Table 10.—Percentage distribution of total replacement rates based on highest and last earnings, by sex<sup>1</sup>**

Replacement rates	Men	Women
<b>Highest earnings</b>		
Total number.....	659,847	488,067
Total percent.....	100	100
Less than 25.....	26	21
25-49.....	59	59
50-66.....	9	12
67 or more.....	6	8
<b>Last earnings</b>		
Total number.....	583,248	345,150
Total percent.....	100	100
Less than 25.....	4	2
25-49.....	47	44
50-66.....	26	24
67 or more.....	23	30

<sup>1</sup> Persons for whom the respective replacement rates were calculated. See Technical Appendix.

new retired worker first received benefits. Because spouses do not necessarily retire together,<sup>9</sup> last-earnings replacement rates of couples sometimes reflect the change from one spouse being retired to both spouses being retired, and other times the change from work to retirement for both spouses.

Although 65 is considered the age of "normal" retirement, most persons receive Social Security benefits before age 65. Only 10 percent of male retired workers and their wives and 4 percent of female retired workers and their husbands had both waited until at least age 65 to receive benefits (table 11).

<sup>9</sup> The average gap between Social Security benefit receipt of retired-worker women and their husbands was more than 5 years and the maximum was 19 years. The average difference for retired-worker men and their wives was only 2 years, but the maximum was again 19 years.

**Table 11.—Percentage distribution of age at receipt of couple Social Security benefits, by sex of respondent<sup>1</sup>**

Age at benefit receipt	Men	Women
Total number.....	241,595	238,072
Total percent.....	100	100
Both aged 65 or older....	10	4
One aged 65 or older....	30	34
Both younger than age 65.....	59	62
Not ascertained.....	1	0

<sup>1</sup> Couples for whom highest-earnings replacement rates were calculated. See Technical Appendix.

About 30-34 percent of couples contained only one spouse who had waited until at least age 65, and in about 60 percent of couples both had claimed benefits before age 65. Thus, nearly all couples received some reduction in benefits for early retirement.

As mentioned above, spouses may receive a worker benefit or a spousal benefit, and those with a worker benefit may receive a supplement when their own benefit is lower than their spousal benefit (dual entitlement). About 50 percent of the beneficiary wives of male retired workers received retired-worker benefits (and about 50 percent of these were dually entitled), 7 percent received disabled-worker benefits and 40 percent received spousal benefits (table 12). By comparison, 91 percent of beneficiary husbands of female retired workers received retired-worker benefits and 7 percent received disabled-worker benefits. Of these couples, 39 percent of the retired wives were dually entitled.

The type of benefit received by the spouse indicates whether benefits were based on earnings, marital status or both—which

should affect replacement rates. Couples with one worker and one spousal beneficiary might be expected to have higher replacement rates than couples with two worker beneficiaries. Their earnings are, for the most part, those of one spouse only, and their benefits include up to a 50 percent supplement for the spouse with little or no covered earnings. The dually entitled also receive a supplement, but both spouses have earned a Social Security benefit, and their replacement rates will depend on the earnings and benefit amounts of both spouses.

### Highest-Earnings Replacement Rates

The median couple replacement rate based on highest earnings was about 30 percent for both male and female retired workers (table 13). Differences between couples were not always as expected.

**Table 12.—Percentage distribution of type of benefit received by respondent and spouse, by sex<sup>1</sup>**

Type of benefit and recipient	Men	Women
<b>Respondent</b>		
Total number.....	241,595	238,072
Total percent.....	100	100
Retired worker:		
Dually entitled.....	0	39
Not dually entitled.....	100	61
<b>Spouse</b>		
Total number.....	238,072	241,595
Total percent.....	100	100
Retired-worker spouse...	91	51
Spouse dually entitled.....	1	25
Spouse not dually entitled.....	90	26
Spousal beneficiary.....	2	40
Disabled-worker spouse...	7	7
Not ascertained.....	0	2

<sup>1</sup> Couples for whom highest-earnings replacement rates were calculated. See Technical Appendix.

**Table 13.—Median couple highest-earnings replacement rates, by age at Social Security benefit receipt, wife's type of benefit, and sex of respondent<sup>1</sup>**

Sex and type of benefit	Total <sup>2</sup>	Age at benefit receipt		
		Both 65 or older	One 65 or older	Both younger than 65
Men <sup>3</sup> .....	30	36	33	29
With retired-worker wives.....	29	34	31	28
Wife dually entitled.....	30	(4)	33	29
Wife not dually entitled.....	28	33	29	27
With spousal beneficiary wives.....	34	40	39	30
Women.....	28	33	31	27

<sup>1</sup> Couples for whom highest-earnings replacement rates were calculated. See Technical Appendix.

<sup>2</sup> Includes couples whose age at benefit receipt was not ascertained.

<sup>3</sup> Includes men with disabled-worker wives and wives whose benefit status was not ascertained.

<sup>4</sup> Fewer than 50 sample cases.

Replacement rates were indeed slightly lower if one spouse first received Social Security benefits before age 65, and still lower if both spouses did so. When both spouses had reduced benefits, the median replacement rate was about 81 percent of the median if both spouses had received full benefits, and it was only 75 percent for the subgroup with spousal benefits. However, other contrasts showed much weaker differences.

For example, the median replacement rate for men with spousal beneficiary wives was only slightly higher than that of men with retired-worker wives—34 percent, compared with 29 percent (table 14). Median Social Security benefits and highest earnings of retired men were about the same whether their spouses received retired-worker benefits or spousal benefits. Couples with retired-worker wives had median Social Security benefits about 10 percent higher and highest earnings about 30 percent higher than did couples with spousal beneficiary wives.

Dual entitlement to benefits of

retired-worker women also made little or no difference in median couple replacement rates. Social Security benefits and highest earnings of men with dually entitled wives were indeed higher than those of men with nondually entitled wives (table 15). However, dually entitled wives had lower benefits and earnings than did nondually entitled wives. Thus, couple benefits and highest earnings of both types of couples were fairly similar, and

their replacement rates were close. A similar compensating effect occurred between dually entitled and nondually entitled retired-worker women and their husbands.

Because spousal beneficiaries may receive a benefit equal to 50 percent of the worker's benefit, if both spouses receive benefits at age 65, the hypothetical couple replacement rate is often assumed to be 50 percent higher than the worker replacement rate. The actual couple replacement rate was 150 percent or more of the worker replacement rate for only 4-5 percent of couples with two retired-worker spouses and 16 percent of couples with a spousal beneficiary. Overall, couple replacement rates of male and female retired workers combined, based on highest earnings, proved to be only 10 percent higher than the worker replacement rate (table 16).

The sex of the new retired worker made a big difference in the relative size of the worker and couple replacement rates. The couple replacement rate was 24 percent higher than the worker replacement rate for men but 6 percent lower for women because men tended to earn more than women and to have

**Table 14.—Median couple highest-earnings replacement rates, Social Security benefit amounts and highest earnings for married workers and couples, by wife's type of benefit and sex of respondent<sup>1</sup>**

Sex and type of benefit	Couple replacement rate	Worker		Couple	
		Social Security	Highest earnings	Social Security	Highest earnings
Men <sup>2</sup> .....	30	\$6,592	\$26,821	\$10,304	\$33,205
With retired-worker wife.....	29	6,714	26,659	10,693	36,602
With spousal beneficiary wife.....	34	6,567	27,072	9,735	28,474
Women.....	28	2,924	10,853	9,824	35,601

<sup>1</sup> Couples for whom highest-earnings replacement rates were calculated. See Technical Appendix.

<sup>2</sup> Includes men with disabled-worker wives and wives whose benefit status was not ascertained.

**Table 15.—Median couple highest-earnings replacement rates, Social Security benefit amounts and highest earnings for married workers and couples, by dual entitlement of retired-worker women<sup>1</sup>**

Dual entitlement of women	Couple replacement rate	Worker		Couple	
		Social Security	Highest earnings	Social Security	Highest earnings
<b>Wives of male retired workers:</b>					
Wife dually entitled.....	30	\$7,557	\$28,320	\$10,985	\$35,592
Wife not dually entitled.....	28	6,060	23,457	10,436	37,956
<b>Female retired workers:</b>					
Worker dually entitled.....	28	2,025	7,277	9,722	35,368
Worker not dually entitled..	29	4,081	13,847	9,973	35,833

<sup>1</sup> Couples for whom highest-earnings replacement rates were calculated. See Technical Appendix.

**Table 16.—Percentage distribution and median ratios of couple to worker replacement rates based on highest and last earnings, by wife's type of benefit and sex of respondent<sup>1</sup>**

Ratio of couple to worker replacement rates	Total couples	Men			Women
		Total <sup>2</sup>	With retired-worker wife	With spousal beneficiary wife	
<b>Highest earnings</b>					
Total number.....	479,667	241,595	124,188	96,229	238,072
Total percent.....	100	100	100	100	100
Less than 100.....	36	14	20	8	58
100-119.....	28	31	44	10	25
120-139.....	16	24	23	23	9
140-149.....	12	22	9	43	3
150 or more.....	7	9	4	16	5
Median ratio.....	110	124	113	142	94
<b>Last earnings</b>					
Total number.....	376,010	218,529	111,512	88,328	157,482
Total percent.....	100	100	100	100	100
Less than 100.....	15	9	11	7	24
100-119.....	13	13	19	5	13
120-139.....	17	20	21	18	11
140-149.....	22	34	27	48	5
150 or more.....	34	24	22	22	47
Median ratio.....	143	142	136	146	143

<sup>1</sup> Couples for whom the respective replacement rates were calculated. See Technical Appendix.

<sup>2</sup> Includes men with disabled-worker wives and wives whose benefit status was not ascertained.

lower replacement rates. Thus, wives tended to raise the married men's replacement rates and husbands tended to lower the married women's replacement rates. The type of benefit received by the spouse also made a big difference in the size of the replacement rate. The couple rate was only 13 percent higher than the worker rate if the spouse was a retired worker, but it was 42 percent higher if the spouse was a spousal beneficiary.

About one-half of retired-worker couples also had employer pensions from their past covered work (table 17). Median couple total replacement rates based on highest earnings were 38 percent for men and their wives and 33 percent for women and their husbands, including those with and without employer pensions. Total replacement rates showed less variation than Social Security benefit replacement rates across highest-earnings quartiles, but total replacement rates were still more than 40 percent higher for those in the lowest quartile than for those in the highest quartile (43 percent, compared with 30 percent for men; 38 percent, compared with 26 percent for women). Employer pensions increased replacement rates very little among those in the lowest earnings quartile because so few received them. Among those in the highest quartile, pensions increased the Social Security benefit replacement rate by 35 percent for men and 23 percent for women. Only 6 percent of married men and 3 percent of married women replaced at least two-thirds of their combined preretirement highest earnings with Social Security benefits and employer pensions (table 18).

**Table 17.—Couple replacement rates and ratios of total to Social Security rates, based on highest and last earnings, and percent with employer pensions by quartiles of earnings and sex of respondent<sup>1</sup>**

Replacement rates and pension receipt	Total	Quartiles of couple earnings			
		1	2	3	4
<b>Men</b>					
Highest earnings:					
Median total rate.....	38	43	42	35	30
Median Social Security rate....	30	39	35	28	21
Ratio as a percent <sup>2</sup> .....	104	101	106	122	135
Percent with employer pensions.....	51	24	52	67	65
Last earnings:					
Median total rate.....	60	86	64	55	48
Median Social Security rate....	49	77	55	46	33
Ratio as a percent <sup>2</sup> .....	107	101	105	116	143
Percent with employer pensions.....	51	30	53	60	71
<b>Women</b>					
Highest earnings:					
Median total rate.....	33	38	35	32	26
Median Social Security rate....	28	36	30	28	20
Ratio as a percent <sup>2</sup> .....	104	101	104	113	123
Percent with employer pensions.....	52	23	51	61	67
Last earnings:					
Median total rate.....	73	154	82	60	48
Median Social Security rate....	62	131	75	54	38
Ratio as a percent <sup>2</sup> .....	106	102	107	107	123
Percent with employer pensions.....	52	40	57	56	64

<sup>1</sup> Couples for whom the respective replacement rates were calculated. See Technical Appendix.

<sup>2</sup> Medians of individual ratios of total to Social Security replacement rates.

### Last-Earnings Replacement Rates

Replacement rates for a couple, like retired-worker replacement rates, were considerably higher when based on last earnings. The median was 49 percent for retired-worker men and their wives and 62 percent for retired-worker women and their husbands (table 17). Couple replacement rates based on last earnings were again closer to those based on highest earnings the later the highest earnings of each spouse were earned, the more quarters of coverage the couple had in the last 5 years before benefit receipt, and when last earnings

were peak earnings. Whether based on last or highest earnings, rates were very similar for men whose highest earnings were all in 1971 or later (table 19). However, couples with nonpeak last earnings, or with less than half the maximum number of quarters of coverage in the last 5 years before benefit receipt, had much higher replacement rates based on last earnings. The median rate for couples with fewer than half the maximum number of combined quarters of coverage was 73 percent for male retired workers and their wives and an impressive 158 percent for female retired

workers and their husbands, compared with 38 percent and 41 percent, respectively, for couples who had the maximum of 40 quarters of combined coverage in the last 5 years before benefit receipt.

Most couples for whom highest earnings replacement rates were calculated earned only part of their highest earnings in 1971 or later (table 20). Two-thirds of couples with a retired-worker husband and a spousal beneficiary wife earned 20 quarters of coverage out of a possible 40 quarters in the last 5 years before benefit receipt—for the most part, earned by the worker only. Another one-fourth of such couples earned fewer than 20 quarters of coverage, and most of the other groups of couples with two-worker beneficiary spouses earned 20 quarters or less, meaning that substantial gaps often exist in

**Table 18.—Percentage distribution of couple total replacement rates based on highest and last earnings, by sex of respondent<sup>1</sup>**

Replacement rates	Men	Women
<b>Highest earnings</b>		
Total number.....	241,595	238,072
Total percent.....	100	100
Less than 25.....	14	19
25-49.....	66	71
50-66.....	14	7
67 or more.....	6	3
<b>Last earnings</b>		
Total number.....	218,529	157,482
Total percent.....	100	100
Less than 25.....	2	1
25-49.....	25	19
50-66.....	35	24
67 or more.....	39	56

<sup>1</sup> Couples for whom the respective replacement rates were calculated. See Technical Appendix.

**Table 19.—Median couples highest- and last-earnings replacement rates by worklife characteristics and sex of respondent<sup>1</sup>**

Worklife characteristics	Men		Women	
	Highest earnings	Last earnings	Highest earnings	Last earnings
<b>Years of highest earnings:</b>				
All in 1971 or later.....	39	41	(2)	(2)
Some in 1971 or later.....	30	49	29	62
All before 1971.....	28	65	26	85
<b>Quarters of coverage in last 5 years:</b>				
Fewer than 20.....	28	73	27	158
20.....	34	49	29	83
21-39.....	29	47	29	57
40.....	28	38	30	41
<b>Level of last earnings:</b>				
Peak <sup>3</sup> .....	37	43	32	39
Nonpeak.....	28	54	28	71

<sup>1</sup> Couples for whom the respective replacement rates were calculated. See Technical Appendix.

<sup>2</sup> Fewer than 50 sample cases.

<sup>3</sup> Last earnings that were 75 percent or more of highest earnings.

**Table 20.—Percentage distribution of couple years of highest earnings and quarters of coverage in the last 5 years, by wife's type of benefit and sex of respondent<sup>1</sup>**

Worklife characteristics	Men					Women
	Total <sup>2</sup>	With retired-worker wife			With spousal beneficiary wife	
		Total	Wife dually entitled	Wife not dually entitled		
<b>Total number.....</b>	241,595	124,188	61,099	63,088	96,229	238,072
<b>Years of highest earnings</b>						
Total percent.....	100	100	100	100	100	100
All in 1971 or later.....	7	3	4	3	13	2
Some in 1971 or later.....	84	85	86	83	84	83
All before 1971.....	9	12	10	14	3	15
<b>Quarters of coverage in last 5 years</b>						
Total percent.....	100	100	100	100	100	100
Fewer than 20.....	21	19	15	23	23	34
20.....	45	32	47	18	63	20
21-39.....	24	33	28	37	11	32
40.....	10	16	10	22	3	14

<sup>1</sup> Couples for whom highest-earnings replacement rates were calculated. See Technical Appendix.

<sup>2</sup> Includes men with disabled-worker wives and wives whose benefit status was not ascertained.

last earnings of one or both spouses.

A commonly made assumption that couple Social Security replacement rates are 150 percent of worker Social Security replacement rates was not true for the majority of beneficiaries, but much more likely to be true when replacement rates were based on last earnings. Twenty-four percent of New Beneficiary Survey men and 47 percent of New Beneficiary Survey women had couple replacement rates at least 150 percent of their own worker replacement rate (table 16).

Total couple replacement rates were also considerably higher when based on their last earnings. The median was 60 percent for men and 73 percent for women (table 17). Couples with higher earnings had much lower total replacement rates—48 percent at the highest quartile, compared with 86 percent for men and 154 percent for women at the lowest quartile. Thus, couples often replaced at least two-thirds of their last earnings with retirement benefits. Thirty-nine percent of married men and their wives and 56 percent of married women and their husbands replaced two-thirds or more of their last earnings with Social Security benefits and employer pensions (table 18).

## Summary and Conclusions

This article has presented replacement rates based on actual earnings for persons first receiving Social Security retired-worker benefits in the early 1980's. Because there is no well-established procedure to calculate actual rates, several alternative definitions were used to show the range of possible figures based on reasonable starting assumptions.

Choosing different reference years, definitions of retirement income, and units of analysis for New Beneficiary Survey men and women, 16 different rates were calculated. "The median replacement rate" varies from a low of 26 percent for men replacing their 5 years of highest earnings with Social Security benefits alone to a high of 73 percent for married women and their husbands replacing their earnings in the last 5 years before she began receiving benefits with the couple's Social Security benefits and employer pensions. This range is very wide, but within it were systematic differences.

Replacement rates based on earnings in both the 5 years of highest earnings and the last 5 years before benefit receipt converged when quarters of coverage in the last 5 years were near the maximum possible, when work on the last job was full time rather than part time, and when earnings in the last 5 years were close to the 5 years of highest earnings. However, most retirees had gaps in earnings or declining earnings during the last 5 years before benefit receipt, and in some cases, last earnings replacement rates were several times higher than highest earnings rates.

Highest earnings replacement rates were higher the lower the earnings and the older the worker was at first receipt of Social Security benefits. Employer pensions increased replacement rates of pensioners substantially, and pensioners averaged substantially higher total replacement rates than nonpensioners. Only a minority of beneficiaries replaced at least two-thirds of their previous earnings with Social Security benefits and employer pensions. The results of this study indicate that it is

generally incorrect to assume that couple replacement rates are 50 percent higher than worker replacement rates.

One of the advantages of actual earnings replacement rates is that they reflect the complexities of real-life workers and couples. This analysis has demonstrated that actual earnings replacement rates vary greatly depending on how they are measured and on the employment and earnings patterns of the worker's entire career and the last few years of the worker's career. For this reason, it is difficult to point to one summary measure of "true" replacement rates based on actual earnings.

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## Technical Appendix

### Universe for Rate Calculations

The New Beneficiary Survey sample included both new retired- and disabled-worker men and women. This study calculated replacement rates for new retired workers only, but sometimes a fine line divided the retired from the disabled. For example, some workers aged 62-64 who had applied for disability benefits began receiving retirement benefits while waiting for determinations of their disability claims. Fox, in his calculations of replacement rates in 1976 and 1982, excluded any case that had a date of disability onset in Social Security Administration records because of possible gaps in earnings histories. The decision was made for this study to include new retired workers even when they had a date of disability onset. Having a date of disability onset could mean that only a claim had been made but no benefits received, or that disability benefits had once been received and the worker had later

recovered. However, those who had claimed benefits as retired workers but soon after were converted to disabled-worker status were excluded as more appropriately disabled than retired. In addition, some persons claiming benefits as widows or other types of beneficiaries and who were converted to retired-worker status in 1980-81, when the sample was selected, were excluded because they were not new beneficiaries.

Replacement rates were calculated for more than 90 percent of retired workers based on highest earnings and 75 percent based on last earnings. Most of those for whom highest-earnings replacement rates were not calculated had become disabled workers soon after first benefit receipt or had not been new retired-worker beneficiaries. Retired workers for whom last-earnings replacement rates were not calculated included the disabled, prior beneficiaries mentioned above, and those who had had little or no covered work in the 5 years before benefit receipt.

Eighty-four percent of new retired-worker men and 67 percent of new retired-worker women were married (table I). As previously defined, a retired couple is one in which both spouses had begun receiving Social Security benefits. Couple replacement rates were calculated for 42 percent of the married men based on highest earnings and 38 percent based on last earnings. The main reason married men did not have couple replacement rates based on highest earnings was that their wives were not beneficiaries. For couple replacement rates based on last earnings, the number with fewer than five quarters of coverage in the last 5 years before benefit receipt was also a factor.

**Table I.—Percent of retired workers who are married, who have couple replacement rates, and major reasons for not having couple replacement rates, by sex of respondent**

Characteristics	Men	Women
Total number.....	692,404	551,678
Percent married.....	84	67
Number of married retired workers.....	579,984	368,281
Percent with—		
Highest earnings replacement rates.....	42	65
Last earnings replacement rates.....	38	43
No beneficiary spouse <sup>1</sup> .....	56	29
Fewer than—		
5 career quarters of coverage.....	1	5
5 quarters of coverage in 5 years before benefit receipt.....	11	39

<sup>1</sup> Some retired workers have no beneficiary spouse and fewer than five quarters of coverage in the last 5 years before benefit receipt.

Replacement rates were calculated for more married women than men—65 percent based on highest earnings and 43 percent based on last earnings. Fewer married women than married men had spouses who had not yet become beneficiaries (29 percent, compared with 56 percent), but many more married women had fewer than five quarters of coverage, either since 1950 or in the 5 years before benefit receipt. Five percent of women, compared with only 1 percent of men, had fewer than five quarters of coverage since 1950. Thirty-nine percent of women, compared with 11 percent of men, had fewer than five quarters of coverage during the last 5 years before benefit receipt.

**Key Variables**

**Social Security benefit amounts.**—Benefit amounts were taken from the Social Security Administration's Master Beneficiary Record (MBR). This analysis uses the annualized monthly benefit amount at the end of the year benefits were first paid. The only

exception is benefits for dually entitled workers—22 percent of the married women and 2 percent of the nonmarried women—whose amounts reflected in the MBR included supplements based on their status as wives or widows. Their benefits were estimated as the amounts that would have been paid without supplements, so that replacement rates compare preretirement earnings with benefits based on the worker's own earnings. Benefits for dually entitled persons were measured by multiplying the primary insurance amount (PIA)—the amount a retired worker would be paid if benefits were first received at age 65—by a factor for early or late retirement. The factor was derived from the age in months at which benefits were first received.

Social Security benefits for couples were measured as the sum of annualized monthly benefits from the MBR for both new retired workers and their spouses at the end of the year the new retired worker first received benefits. This amount includes any supplements for dually entitled persons.

**Preretirement earnings.**—A worker's preretirement earnings were taken from the Summary Earnings Record (SER), which contains quarters of coverage and earnings up to the taxable maximum amount in every year from 1951 to the present. Amounts were wage indexed to the year of first benefit receipt to preserve the relative position of earnings in the wage structure. Total earnings for those who earned more than the taxable maximum were estimated using a method developed by Fox, with a few modifications designed to include as many cases as possible.

Average highest and last earnings included years with zero earnings. However, those persons with no covered earnings since 1950 or in the last 5 years before benefit receipt were excluded from the respective replacement rate calculations. Those persons with fewer than five quarters of coverage in either 5-year period were also excluded because of the extremely high replacement rates they tended to have.

Years of highest earnings were used in the calculation of benefits, including the substitution of years with higher earnings before 1951 or after entitlement in place of any years with lower earnings from 1951 to the year before entitlement. A small number of retired workers had all of their covered earnings before 1951. These earnings would have been included in their benefit calculation, but they do not appear in the SER, which is the basis of the calculation of highest earnings.

Couple earnings in the last 5 years before benefit receipt were taken to be the average of the summed, estimated total, wage-indexed earnings of the retired worker and his/her spouse in the 5 years before the retired worker first received benefits, whether or not they had been married the entire

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time. Couples with no earnings, or in which the new retired worker had fewer than five quarters of coverage in that period, were excluded.

Highest couple earnings were the sum of the separate spouse measures of average highest 5 years of estimated total, wage-indexed earnings from 1951 to the year before first benefit receipt of the new retired worker.

Highest preretirement earnings of couples could have been measured by the highest summed couple earnings rather than highest earnings of each spouse chosen independently, in order to represent the actual experience of the couple. But almost one-fourth of the couples had married since 1950, and their summed earnings would not necessarily have represented the couple's experience. This problem might have been surmounted by excluding the couples who had married after 1950 or by factoring in the marriage date into the period of years for the highest earnings calculation to ensure that summed earnings were earned during the marriage. For the sake of simplicity, and to include as many couples as possible, spouses were treated as individuals in the calculation of highest couple earnings.

#### **Employer pension income.—**

Income from employer pensions was taken from the New Beneficiary Survey as of 1982. Pension income, including Railroad Retirement benefits, government employee pensions, military or reserve pensions, and private employer or union pensions, was reported for respondents and their spouses in each of the 3 months preceding the interview. Because only earnings from jobs covered by the Social Security program were recorded on the SER, only income from pensions earned on covered jobs

was included in the measure of employer pensions. All income from Federal Government employee pensions and income from State or local government employee pensions for those who reported any noncovered work (about 20 percent of such pension recipients) was excluded.

The survey ascertained coverage status of jobs rather than pensions received. Also, pension types, such as State government pensions, were reported as one amount, although more than one State pension may have been received. Consequently, the adjustment to exclude noncovered State and local pensions may have excluded some pensions that were earned on covered jobs for workers who had both covered and noncovered work in their careers and earned State or local pensions from covered employment.

The summed quarterly pension amounts were annualized. Calculating the replacement of earnings by Social Security benefits and employer pensions involved combining benefit amounts and preretirement earnings for 1980 or 1981 with employer pensions for 1982. To do this, benefits and preretirement earnings were price indexed from 1980 or 1981 to 1982.

#### **Estimating Total Earnings**

Fox devised a method of estimating total earnings from information available in the Summary Earnings Record. His method used earnings up to the taxable maximum amount and the pattern of quarters of coverage earned in each year. The year was divided into eight segments. A person who earned the taxable maximum in the fourth quarter was assumed to have achieved this level of earnings in the middle of the fourth quarter, or seven-eighths of

the way through the year. Similarly, if the taxable maximum was achieved in the first through third quarters, it was assumed to have been achieved in the middle of the particular quarter. Estimated total earnings were derived by multiplying the taxable maximum amount by the inverse of this fraction, such as eight-sevenths for a fourth-quarter maximum.

Fox did not use estimates of first quarter taxable maximum earnings because he considered them too inaccurate. In this analysis, an attempt was made to calculate replacement rates for as many new retirees as possible. In the case of persons earning the taxable maximum amount in the first quarter, one knows that they are high earners. Rather than disregarding this information, it was assumed conservatively that maximum earnings were reached at the end of the first quarter rather than at the mid-point.

In 1978, a system of annual rather than quarterly reporting of earnings to SSA was instituted. In this system, a quarters of coverage pattern cannot be used to estimate total earnings. To estimate total earnings for 1978 through 1980, the following method was used. If earners did not have maximum earnings in 1975-77, but did have maximum earnings in 1978-80, it was assumed conservatively that they had earned the maximum in the fourth quarter. If they had had maximum earnings in 1975-77, the quarter or most common quarter of attaining the taxable maximum in 1975-77 was used to estimate earnings in 1978-80.

Because of legislative changes that tied increases in the taxable maximum to increases in average earnings, the taxable maximum



amount was increased by considerably more than increases in average earnings in 1979 and 1980. To estimate total earnings from taxable maximum earnings in these years, it was assumed that the taxable maximum was achieved three-quarters of the way through any quarter deemed to be a taxable maximum quarter rather than mid-way.

### Comparison with Other Replacement Rates

Three sets of hypothetical Social Security replacement rates for low, average, and high wage earners are presented in table II: For those receiving benefits at age 62 in 1982, reduced by 20 percent for early retirement; for those receiving benefits at age 65 in 1982; and an average of the first two. The median actual last-earnings replacement rate (40 percent) is in fact very close to the average of the two hypothetical rates for average earners. The median actual highest-earnings replacement rate of 28 percent is also similar to the hypothetical rates for high earners.

It is more difficult to compare the actual earnings replacement rates calculated here with others based on actual earnings. One major problem of comparing across surveys is having comparable published numbers. In this section, an attempt is made to compare replacement rates from the New Beneficiary Survey with those from SSA's Survey of Newly Entitled Beneficiaries (SNEB) conducted in 1968-70 and the Retirement History Study (RHS) conducted in 1969-79.

The published replacement rates from the SNEB that were calculated most similarly to the NBS rates were those based on the highest 3 years of unindexed, estimated total

**Table II.—Hypothetical worker replacement rates, by level of earnings and age at benefit receipt, 1982**

Age at benefit receipt	Level of earnings		
	Low	Average	High
62 <sup>1</sup> .....	46	34	20
65 .....	64	49	29
Average .....	55	41	24

<sup>1</sup> Reduced by 20 percent for early retirement. Source: Office of the Actuary, Social Security Administration.

earnings in the 10 years before benefit receipt.<sup>10</sup> These rates were tabulated for private pension recipients only, in contrast to the broader categorization of employer pension recipients used here. Table III shows SNEB replacement rates

<sup>10</sup> Alan Fox, "Alternative Measures of Earnings Replacement for Social Security Benefits," in *Reaching Retirement Age: Findings From a Survey of Newly Entitled Workers, 1968-70* (Research Report No. 47), Office of Research and Statistics, Social Security Administration, 1976.

compared with NBS replacement rates based on indexed earnings for recipients of employer pensions in both the highest 5 years and last 5 years before benefit receipt. The SNEB rates were very close to the NBS rates based on the highest 5-year measure, with one exception in which the SNEB rate fell between the NBS highest and last 5-year rates.

The published replacement rates from the RHS that were calculated most similarly to the NBS rates were for men based on the highest 3 years of estimated total, price-indexed earnings in the 10 years before benefit receipt.<sup>11</sup> Whether looking at retired-worker and couple replacement rates for all men or rates for men with employer pensions, the RHS figures were between the NBS rates based on highest and last earnings but closer

<sup>11</sup> Alan Fox, "Earnings Replacement Rates and Total Income: Findings From the Retirement History Study," *Social Security Bulletin*, October 1982, pages 3-23.

**Table III.—Comparing median actual earnings replacement rates from the Survey of Newly Entitled Beneficiaries and the New Beneficiary Survey**

Earnings measures	Men		Women	
	Social Security only	Social Security plus pension	Social Security only	Social Security plus pension
<b>Survey of Newly Entitled Beneficiaries</b>				
Beneficiaries with private pensions: High 3 in last 10 estimated total not indexed.....	24	49	32	52
<b>New Beneficiary Survey</b>				
Beneficiaries with employer pensions: High 5 estimated total wage indexed.....	24	42	32	48
Last 5 estimated total wage indexed.....	33	56	40	59

<sup>1</sup> From *Reaching Retirement Age*, (Research Report No. 47), Office of Research and Statistics, Social Security Administration, table 14.9.

to the highest earnings rates (table IV).

Replacement rates were somewhat similar across surveys. However, one must remember that comparisons were being made between replacement rates based on indexed earnings with unindexed earnings, price-indexed earnings with wage-indexed earnings, a measure of earnings that is both high and recent with separate measures of high earnings and recent earnings, and private pension recipients with employer pension recipients to name some of the most obvious differences in measurement. In addition, the samples were chosen somewhat differently. These differences in measurement make it impossible to tell from the actual earnings replacement rates that are available whether replacement rates in the early 1980's have changed from those in the early 1970's.

**Table IV.—Comparing median actual earnings replacement rates from the Retirement History Study and the New Beneficiary Survey**

Earnings measures	Total		With employer pensions	
	Social Security only	Social Security plus pension	Social Security only	Social Security plus pension
<b>Retirement History Study<sup>1</sup></b>				
High 3 in last 10 estimated total price indexed:				
Men .....	29	38	25	44
Married men and their wives .....	37	48	32	51
<b>New Beneficiary Survey</b>				
High 5 estimated total wage indexed:				
Men .....	26	33	24	42
Married men and their wives .....	30	38	29	43
Last 5 estimated total wage indexed:				
Men .....	38	50	33	56
Married men and their wives .....	49	60	45	65

<sup>1</sup> From Alan Fox, "Earnings Replacement Rates and Total Income: Findings From the Retirement History Study," *Social Security Bulletin*, October 1982, table 4.