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ACTUAL REPLACEMENT RATES FOR RETIRING WORKERS

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Introduction

The purpose of this note is to analyze the actual replacement rates for workers who have recently retired. Earlier actuarial notes have covered the subject of replacement rates.[1] However, all of them involved projections of future replacement rates for hypothetical cases for which it was assumed that the individual's earnings would increase according to a steady pattern and that benefit levels would increase according to an assumed rate of increase in the CPI. This note is based on actual retirement cases and, therefore, it involves the various employment and earnings patterns that were actually experienced.

Description of the Data Base

The data for this note were taken from a sample of retired worker benefits awarded in 1975 (both those retiring after age 65 with full benefits and those retiring at ages 62-64 with reduced benefits). The sample originally totaled 9,752 individuals and included several special cases (old-start and special-minimum). These special cases were eliminated reducing the total to 8,617 new-start cases with regular benefits.

Determining the Earnings Measure for Computing Replacement Rates

Although many analysts and planners frequently use the concept "replacement rate", this is usually done without precisely defining the concept. In general, they operate with the idea that "replacement rate" is the ratio of post-retirement benefits to pre-retirement earnings, but without a clear idea of how either of these two terms are defined.

There are several ways in which the post-retirement benefits and the pre-retirement earnings could be acceptably defined. A simple and obvious one, which was used in the actuarial notes referred to above, is the ratio of the worker's monthly benefit immediately following retirement to his average monthly earnings in the year immediately prior to retirement. This definition was adequate for the hypothetical steady worker cases with steadily increasing earnings and benefit assumptions used in those notes. Such a definition, however, has limited application in the case of actual workers, many of whom have irregular earnings patterns, with little or no earnings in the year before retirement or with their highest earnings occurring earlier in their careers.

In determining the earnings to be replaced, the entire work history (or a substantial portion of it) should be taken into account. Otherwise the resulting values for the replacement rates would be left subject to the vicissitudes of the variety of work patterns that are experienced by the workers throughout their careers.

Another consideration in determining the earnings measurement is whether or not the earnings should be indexed in order to update the values for the individual years, so as to make them more comparable. Obviously $5,000 in 1951 is quite different from $5,000 in 1974. The two most common indexing bases that are used are average earnings in the national economy and the CPI.

For this note, the following four earnings measures were chosen:

1. The earnings for the years 1951-74, indexed according to average wages;
2. The highest five years of earnings unindexed;
3. The last five years of earnings, indexed according to average wages; and
4. The highest ten years of earnings, indexed according to the CPI.

[1]See Actuarial Notes Nos. 81, 87, and 90.

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Analysis of Replacement Rates

The data in the sample were classified by sex and level of replacement rate. The replacement rates were computed on the basis of the worker's primary insurance amount (PIA)—i.e., the benefit payable if first claimed at age 65—and of the couple's benefit where both are age 65 (that is, 150% of PIA). The latter basis would allow for the possible presence of a dependent spouse.

Table 1 presents average replacement rates for workers and couples by sex and amount of benefit for each of the four earnings measures previously described. Because of the weighted nature of the benefit formula, replacement rates were higher for females and for workers with lower benefit amounts. Tables 2 and 3 present cumulative distributions of the replacement rates in terms of percentages of the rates that exceed a given level. These tables indicate that under either the "24 years wage-indexing" or the "high-5 years unindexed" measures, few of the workers have replacement rates of less than 40%, and few couples would have replacement rates of less than 60%. This is also the case with the other two measures, but at levels of replacement rates of 33% and 50% for workers and couples, respectively. These tables indicate that there is a moderate degree of variation in the replacement rates depending on the type of earnings measure used to calculate them.

Adequacy of Replacement Rates

As measured against the highest five years of earnings unindexed, about 5% of the workers (450) have replacement rates of less than 40%, while about 6% of the workers (550) have replacement rates greater than 100%. From table 2 the reader may determine similar proportions at various replacement rates based on the four measures given. It may also be observed from this table that the average replacement rate for worker's benefits is about 50% for the first three measures and around 43% under the fourth measure, highest 10 years of CPI-indexed earnings.

Similarly, it may be observed from table 3 that in none of the cases is the couple's benefit below 50% of pre-retirement earnings and that, depending on the measure used, between 9% and 30% of the couples would have benefits that are over 100% of pre-retirement earnings.

The replacement rates discussed in this note are based on gross earnings. It can be argued that it would be more appropriate to base the replacement rates on net earnings after taking into account the effect of federal and state income taxes, social security taxes, transportation to and from work, and additional expenses related to holding a job. These deductions total around 25 to 30% of gross earnings for the average worker and are higher for the high-pay worker and lower for the low-pay worker. If the comparison were based on net earnings the replacement rates shown in the tables in this note would be increased by at least 1/3 on the average. Based on 30% deductions from gross earnings, a replacement rate of over 70% would result in social security benefits that are over 100% of net earnings. It may be observed from table 3 that this level of benefits would be applicable in over 60% of the couple cases under the first two measures.

If we take into account the possibilities of eligibility to other (non social security) pensions and the fact that the retired worker can have moderate earnings without affecting his eligibility to social security benefits, there would be many other workers whose income after "retirement" is higher than their net pre-retirement earnings.

Replacement rates vary inversely with the level of earnings and the steadiness of the pattern of earnings; that is, nonsteady workers attain higher replacement rates than do steady workers. The question has always existed as to whether those who do not have a significant attachment to the covered work force should receive large benefits in relation to their average covered earnings. This issue is usually discussed in terms of adequacy of benefits. It can be argued that there are other ways of attaining a higher degree of adequacy without rewarding those with erratic attachment to covered employment.

TABLE 1

Average Replacement Rates By Sex, Amount of Benefit, and Earnings Measure

Monthly Benefit Amount	Females				Males			
	24-Years Wage-Indexed	High-5 Years	Last 5 Years Wage-Indexed	High 10 Years CPI-Indexed	24-Years Wage-Indexed	High-5 Years	Last 5 Years Wage-Indexed	High 10 Years CPI-Indexed
Worker's Benefit Only (100% of PIA)								
Under $102	2.39	1.15	3.08	1.20	3.46	1.59	3.85	1.77
$102 - 150	1.01	.57	1.00	.53	.97	.51	.76	.57
150 - 200	.78	.55	.82	.47	.71	.49	.80	.42
200 - 250	.60	.53	.60	.45	.54	.51	.66	.41
250 - 300	.53	.49	.49	.43	.48	.49	.55	.41
300 - 350	.49	.46	.42	.42	.43	.44	.41	.40
350+	.47	.44	.40	.41	[1]	[1]	[1]	[1]
Total	.64	.54	.61	.47	.47	.47	.46	.41
Couple's Benefit (150% of PIA)								
Under $153	3.58	1.73	4.62	1.80	5.19	2.39	5.77	2.65
$153 - 200	1.62	.82	1.36	.81	1.45	.81	4.01	.76
200 - 300	1.43	.83	1.29	.72	1.11	.73	1.17	.65
300 - 400	.88	.78	.88	.67	.80	.75	.92	.61
400 - 500	.78	.71	.68	.63	.67	.70	.70	.61
500+	.71	.68	.61	.62	.64	.64	.58	.59
Total	.96	.80	.91	.71	.70	.70	.70	.61

[1] There was no male worker in the sample with monthly benefit of $350 or more.

TABLE 2

Cumulative Distribution of Worker's Benefit Replacement Rates By Amount and Earnings Measure

Monthly Benefit Amount	Percentage of Cases With Replacement Rate							Average Replacement Rate
	Over 40%	Over 50%	Over 60%	Over 70%	Over 80%	Over 90%	Over 100%	
			24-Years Wage-Indexed					
Under $102	100	100	100	100	100	99	98	2.54
$102 - 150	100	100	100	98	88	67	54	1.01
150 - 200	100	100	86	63	41	24	13	.76
200 - 250	100	81	34	17	6	2	1	.58
250 - 300	100	39	13	5	1	0	0	.50
300 - 350	100	11	1	0	0	0	0	.44
350+	100	18	4	0	0	0	0	.47
Total	100	66	35	27	20	16	13	.52
			High 5 Years					
Under $102	100	98	93	87	80	73	66	1.22
$102 - 150	93	67	46	23	10	4	1	.56
150 - 200	90	69	38	13	3	1	0	.53
200 - 250	92	70	24	11	0	0	0	.52
250 - 300	84	42	4	0	0	0	0	.49
300 - 350	68	10	10	0	0	0	0	.45
350+	100	0	10	0	0	0	0	.44
Total	95	47	21	11	8	7	6	.49
			Last 5 Years Wage-Indexed					
Under $102	99	99	97	95	93	90	88	3.20
$102 - 150	93	81	71	63	58	54	51	.96
150 - 200	89	77	65	57	51	46	43	.82
200 - 250	90	68	45	33	28	25	22	.62
250 - 300	86	41	22	15	12	10	8	.51
300 - 350	47	6	2	6	0	0	0	.41
350+	75	0	0	0	0	0	0	.40
Total	76	76	35	29	26	24	22	.51
			High 10 Years CPI Indexed					
Under $102	100	98	94	88	81	75	69	1.28
$102 - 150	97	66	25	5	1	0	0	.53
150 - 200	81	34	5	1	0	0	0	.46
200 - 250	74	14	0	0	0	0	0	.43
250 - 300	73	0	0	0	0	0	0	.42
300 - 350	42	0	0	0	0	0	0	.40
350+	100	0	0	0	0	0	0	.41
Total	68	20	11	9	8	7	7	.43

TABLE 3

Cumulative Distribution of Couple's Benefit (150% of PIA) Replacement Rates By Earnings Measure

Monthly Benefit Amount	Percentage of Cases With Replacement Rate							Average Replacement Rate
	Over 50%	Over 60%	Over 70%	Over 80%	Over 90%	Over 100%	Over 150%	
			24-Years Wage-Indexed					
Under $152	100	100	100	100	100	100	98	3.81
$153 - 200	100	100	100	100	100	99	66	1.59
200 - 300	100	100	100	98	88	75	18	1.02
300 - 400	100	100	92	55	31	19	0	.82
400 - 500	100	100	36	14	5	2	0	.66
500+	100	100	11	2	0	0	0	.65
Total	100	100	64	46	35	29	13	.78
			High 5 Years					
Under $152	100	100	99	96	93	89	66	1.83
$153 - 200	100	94	76	55	43	24	1	.82
200 - 300	98	91	78	59	39	21	0	.81
300 - 400	100	96	91	79	53	21	4	.77
400 - 500	100	96	54	10	1	0	0	.70
500+	100	100	3	0	0	0	0	.65
Total	99	95	62	36	21	13	6	.73
			Last 5 Years Wage-Indexed					
Under $152	100	100	99	98	97	96	88	4.81
$153 - 200	100	96	87	78	68	62	45	1.40
200 - 300	96	90	82	74	66	60	44	1.26
300 - 400	96	89	73	52	40	32	19	.89
400 - 500	99	80	34	17	11	8	3	.69
500+	100	11	1	0	0	0	0	.58
Total	98	76	54	31	35	31	22	.76
			High 10 Years CPI Indexed					
Under $152	100	100	99	97	94	89	69	1.92
$153 - 200	100	99	76	54	24	14	0	.80
200 - 300	92	83	56	24	8	3	0	.70
300 - 400	96	74	32	2	0	0	0	.64
400 - 500	100	68	2	0	0	0	0	.62
350+	100	14	0	0	0	0	0	.59
Total	98	68	28	14	11	9	7	.64