AN ISSUE IN BRIEF
CENTER FOR
RETIREMENT
RESEARCH
AT BOSTON COLLEGE

NOVEMBER 2005, NUMBER 36

HOW MUCH PRE-RETIREMENT INCOME DOES SOCIAL SECURITY REPLACE?

BY ALICIA H. MUNNELL AND MAURICIO SOTO*

Introduction

Do today's retirees have sufficient income to meet their needs? One common way to address this question is to determine a household's "replacement rate." The replacement rate gauges the extent to which retirement income allows workers to maintain their pre-retirement standard of living. In the U.S. retirement income system, Social Security is the single most important source for most people. It provides a basic level of replacement, upon which individuals can build through additional saving. This *brief* addresses the question of how much pre-retirement income Social Security replaces for current recipients. Subsequent briefs will provide a more comprehensive evaluation of replacement rates by including income from employer-sponsored pensions, other savings, and housing equity, as well as Social Security.[1]

The first section of this *brief* explains the concept of a replacement rate and discusses how much people need for a comfortable retirement. The second section describes how Social Security replacement rates are constructed for this analysis and then reports results for individuals and households. The final section summarizes the key findings.

What Is a Replacement Rate?

Replacement rates are used to assess how well older people can maintain their pre-retirement levels of consumption once they stop working.[2] The most direct approach would be a comparison of household consumption while working with consumption after retirement. But such data are rarely available. An indirect approach is to compare pre- and post-retirement income. Using this method, a replacement rate is defined as the ratio of post-retirement income to pre-retirement income. For example, retirees with an annual income of $35,000 compared to a pre-retirement income of $50,000 would have a replacement rate of 70 percent ($35,000/$50,000). This concept is widely used by analysts and financial planners and is the one adopted in this *brief.*

What level of replacement rate do people need to maintain their standard of living in retirement? Clearly, the answer is less than 100 percent — for three main reasons. First, people pay much less in taxes after retirement. When people are working, their earnings are subject to both Social Security payroll taxes and federal personal income taxes. After retirement, they no longer pay Social Security taxes, and they pay lower federal income taxes because only a portion of Social Security benefits are taxable. Second, they no longer need to save a portion of their income for retirement and, in fact, can draw on their accumulated reserves. In addition to contributing to 401(k) plans, many households try to pay off their mortgage before they retire. Thus, a greater share of their income is available for spending. A final factor often mentioned is that work-related expenses, such as clothing and transportation, are either no longer necessary or are much reduced. Although this factor often tops many analysts' lists, it is relatively small compared to taxes and saving.

*Alicia H. Munnell is the Director of the Center for Retirement Research (CRR) and the Peter F. Drucker Professor of Management Sciences at Boston College's Carroll School of Management. Mauricio Soto is an Economics graduate student at Boston College and a Senior Research Associate at the Center. Natalia A. Jivan, Marric Buessing, and Nadezhda Karamcheva did a fabulous job programming the *Health and Retirement Study*. Andrew Varani, Jamie Lee, and Reed Hatch provided extraordinary research assistance. The authors benefited greatly from discussion with Center colleagues. This *brief* is adapted from a longer paper by Alicia H. Munnell and Mauricio Soto entitled "What Replacement Rates Do Households Actually Experience in Retirement?" that is available at http://www.bc.edu/crr/papers/wp_2005-10.pdf.

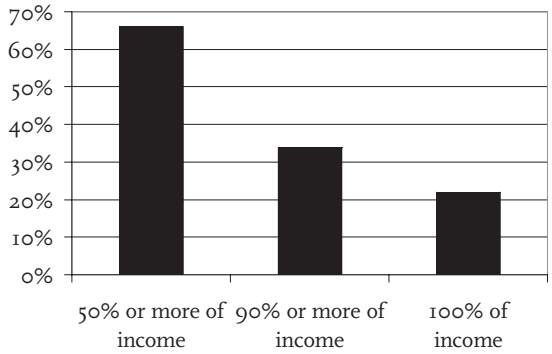
While all analysts cite the same factors for why retirees need less than their full pre-retirement income, they employ different approaches to calculating precisely how much less. Overall, the range of studies that have examined this issue consistently find that middle class people need between 65 and 75 percent of their pre-retirement earnings to maintain their life style once they stop working.[3] The focus of this study is to determine what replacement rates people are actually receiving from Social Security, by far the most prominent source of retirement income.

How Much Income Does Social Security Replace?

Social Security was designed as the foundation on which individuals could build to establish a secure retirement. The traditional model of retirement income envisions that retirees would supplement Social Security benefits with income from employer-sponsored pensions and their own personal saving. In practice, however, many individuals do not have pensions. And, outside of pension plans, Americans generally do not save much on their own. Therefore, a large share of retirees are very dependent on Social Security — a third receive more than 90 percent of their income from this one source (see Figure 1).

FIGURE 1. AGED RELY HEAVILY ON SOCIAL SECURITY FOR RETIREMENT INCOME

Percent of Aged Receiving Social Security Benefits, by Importance Relative to Income



Source: U.S. Social Security Administration (2004a).

Constructing Replacement Rates

The question is how much do people receive from Social Security relative to their pre-retirement earnings. Replacement rates are often calculated on an individual worker basis given that Social Security benefits are based on individual worker earnings.[4] However, the great majority of Americans (roughly 80 percent) enters retirement as part of a married couple. In order to compare results with official outcomes from the Social Security Administration, this *brief* first presents individual replacement rates. Then, to best reflect reality, it combines the individuals into households.

One important choice in any calculation of replacement rates is the measure of pre-retirement earnings — the denominator of the formula. Due to the focus on Social Security benefits, this *brief* will rely on "Average Indexed Monthly Earnings (AIME)," which is the measure of average lifetime earnings used by the Social Security Administration in determining an individual's benefits.[5]

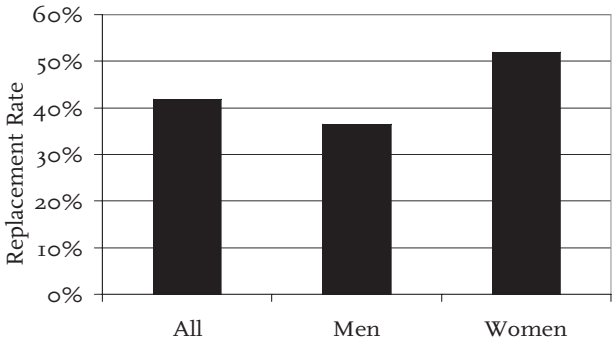
To calculate replacement rates, the analysis relies on the Health and Retirement Study (HRS). The HRS is a nationally-representative data set that began in 1992 with about 12,650 individuals from about 7,600 households.[6] This original survey interviewed people age 51-61 and their spouses (regardless of age), and it is re-administered every two years.

Social Security Replacement Rates for Individuals

The results for individuals from the HRS show that Social Security replaced 42 percent of pre-retirement income for the median new beneficiary in 2001.[7] This figure happens to match the Social Security Administration projection that is published in the annual Trustees' report.[8] However, this result is strictly a coincidence, because the Social Security projection differs from the HRS calculation in three ways — Social Security uses a different measure of pre-retirement income, their assumptions about workers' wage histories differ from actual experience, and they assume workers retire later than they actually do.[9]

Figure 2. Women Have Higher Social Security Replacement Rates Than Men

Median Social Security Replacement Rates of New Retired-Worker Beneficiaries



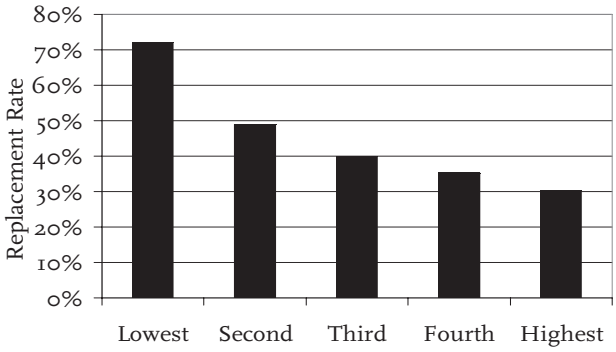
Source: Authors' calculations from waves 1-6 of the *Health and Retirement Study*.

The overall HRS replacement rate of 42 percent is the composite of a median replacement rate of 37 percent for men and 52 percent for women (see Figure 2). The differences for men and women are due to earnings levels. Men have higher average earnings levels for two reasons — they earn higher wages than women and they work more years. Therefore, men have lower replacement rates than women, because Social Security's progressive benefit formula is designed to replace a smaller share of pre-retirement income for a high earner compared to a low earner.

Looking at recipients by earnings rather than gender shows an even wider range. For example, individuals in the bottom fifth of earners had a 72 percent replacement rate while those in the top fifth received a 31 percent replacement rate (see Figure 3).

Figure 3. Low Earners Have Higher Replacement Rates Than High Earners

Median Social Security Replacement Rates of New Retired-Worker Beneficiaries, by Quintiles of AIME



Source: Authors' calculations from waves 1-6 of the *Health and Retirement Study*.

Social Security Replacement Rates for Households

In this section, the Social Security replacement rates are presented for the household unit rather than the individual.[10] In considering replacement rates for married couples, Social Security's spousal benefit plays an important role. While working men and women are treated identically under the Social Security system in terms of benefit accrual, low-earning or non-employed spouses, who are generally women, are also entitled to a 50-percent spouse's benefit based on the primary earner's wages. Thus, couples consist of two types — those with one worker where the spouse has no substantial work history and therefore an AIME of zero and those where both spouses work and both have a positive AIME. For couples in which the wife has no earnings record of her own, one would expect a replacement rate of about 150 percent of 37 percent (the replacement rate for the median man) or 56 percent.[11] In couples where both spouses have an earnings record, two adjustments occur. First, the wife's earnings are added to the household's pre-retirement income. Second, the wife's Social Security benefit is added to the husband's benefit. Data on individual earnings from the HRS predict a replacement rate for a median two-earner couple of 42 percent.[12]

The actual HRS replacement rates for couples are very close to the predictions: 58 percent for couples in which only one spouse works and 41 percent for couples where both spouses work. For all couples, the replacement rate is 44 percent (see Table 1). The

Table 1. Couples with Non-Working Spouses Recieve the Highest Replacement Rate

Median Social Security Replacement Rates

Household Type	Replacement Rate
Couples	44 %
Spouse AIME = 0	58 %
Spouse AIME > 0	41 %
Single	45 %
Men	39%
Women	49 %
All	44%

Source: Authors' calculations from waves 1-6 of the *Health and Retirement Study*.

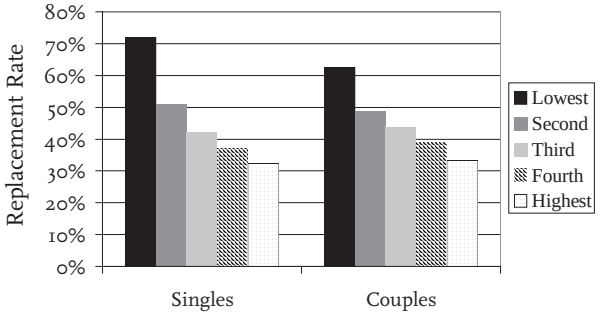
large gap between couples based on the spouse's work history is virtually inevitable in a system that provides a 50-percent spouse's benefit. As women go to work, they increase the amount of the household's pre-retirement earnings but often fail to increase the amount of the household's Social Security benefits. Where the husband is the median worker, for example, the working wife does not add to the household's Social Security benefit until her earnings exceed 36 percent of her husband's. Since more than 40 percent of working wives earn less than 36 percent of their husband's earnings, working wives often reduce household Social Security replacement rates.

For single-person households, the median Social Security replacement rate is 45 percent — very close to that for couples (see Table 1). The average, however, is the result of a replacement rate of 39 percent for single men and 49 percent for single women. This difference by gender simply reflects the fact that men on average earn more than women. The replacement rate for single women (49 percent) is lower than that for all women (52 percent). This discrepancy reflects the fact that single women, who must depend on themselves for support, earn more on average than married women. Indeed, the HRS shows that single women have an AIME equal to 1.2 times that of married women.

Figure 4 presents replacement rates by earnings for couples and for single individuals. For single-person households, replacement rates range from 72 percent to 32 percent, nearly identical to the range of individual earned replacement rates shown in Figure 3. For couples, however, the range of actual replacement rates (63 percent to 33 percent) narrows considerably.

FIGURE 4. MARRIED WOMEN'S VERY HIGH REPLACEMENT RATES DISAPPEAR WHEN COMBINED INTO COUPLES

Median Social Security Replacement Rates, by Quintiles of Household AIME



Source: Authors' calculations from waves 1-6 of the *Health and Retirement Study*.

The high replacement rates for individuals disappear once people are combined into couples because the primary recipients of these high rates are married women. When married women are paired with their husbands, who tend to have higher earnings and lower replacement rates, the range narrows.

Conclusion

Three interesting conclusions emerge from this analysis. First, the median replacement rate for newly retired worker beneficiaries according to both the HRS and SSA data is about 42 percent. These replacement rates would be higher if so many individuals did not receive their benefits before the normal retirement age. Second, the median replacement rate for a female worker is 52 percent and for a male worker 37 percent due to their different earnings histories. Third, on a household basis, Social Security benefits provide on average about a 44 percent replacement rate for both couples and single individuals. The range of actual Social Security replacement rates is narrower, however, for couples than for individual workers.

In some sense, the Social Security replacement rates presented here represent the "golden age" of retirement income. Today's retirees are claiming Social Security benefits before the extension in the retirement age to 66 and then 67, which is equivalent to an across-the-board cut in benefits. Today's retirees also do not face the huge deductions in their Social Security check to cover Medicare premiums that tomorrow's retirees will. And today, average retirees do not pay personal income tax on their Social Security benefits, whereas future retirees will increasingly see a portion of their benefits subject to taxation. The relatively comfortable circumstances of today's retirees make it very hard to call attention to the challenges that future retirees will face.

Endnotes

1 For a detailed examination of replacement rates, see Munnell and Soto (2005a).

2 Technically, people are interested in smoothing marginal utility, not consumption. To the extent that they get pleasure from leisure in retirement, they can maintain overall utility with lower levels of consumption after they stop working. The enjoyment of leisure may explain what the literature calls the "retirement-consumption puzzle" — namely, the fact that consumption appears to drop as people retire. See Bernheim, Skinner and Weinberg (2001), Banks, Blundell and Tanner (1998), and Hurd and Rohwedder (2003).

3 For example, Palmer (2001) finds that single workers earning $50,000 need to replace 74 percent of their income while couples with the same total income need 76 percent.

4 The initial design of the Social Security program did not include spousal benefits; these benefits were added in 1939.

5 The AIME is determined in two steps. First, the worker's annual taxable earnings after age 22 (or 1950) are updated, or indexed, to reflect the general wage level at age 60. Second, Social Security takes the highest 35 years of wage-indexed earnings between ages 22 and 62 and divides that total by the number of months in that period.

6 The HRS is conducted by the Institute for Social Research (ISR) at the University of Michigan and is made possible by funding from the National Institute on Aging. More information is available at the ISR website: http://hrsonline.isr.umich.edu/. See Juster and Suzman (1995) for a detailed overview of the survey.

7 The analysis described here uses data from waves 1-6 of the *Health and Retirement Study*.

8 For hypothetical medium scaled workers retiring at age 65, the replacement rate has remained around 42 percent during the last 20 years (Social Security Administration, 2005). In addition to the Trustees' report, the Social Security Administration also publishes the actual replacement rates received by individuals in the first year of their retirement, using AIME as the measure of pre-retirement income (Social Security Administration 2004b). These rates are very close to the ones produced by the HRS analysis.

9 See Munnell and Soto (2005b).

10 In the case of single-person households, replacement rates are simply the ratio of benefits to AIME in the year the individual retires. For couples, replacement rates are estimated in the first year in which both members of the household are retired. In the case where both members of the couple are already retired, the procedure is to adjust the AIME and primary insurance amount (i.e., the monthly benefit an individual would receive if she claimed at the normal retirement age) for each spouse for inflation in order to report them for a common year and then divide the couple's combined benefits by the couple's combined AIME. In the case where only one spouse is retired, the working spouse — generally the woman — is randomly assigned a retirement age based on the female pattern of retirement.

11 This estimate assumes that single people have similar earnings histories as married people.

12 This prediction relies on the following two findings: 1) the median earned replacement rates for men and women are 37 percent and 52 percent, respectively; and 2) the median ratio of wife's to husband's AIME is 42 percent.

References

Banks, J., Blundell, R. and S. Tanner, S. 1998. "Is There a Retirement-Savings Puzzle?" *American Economic Review* 88:4 769-88.

Bernheim, D., Skinner, J. and S. Weinberg. 2001. "What Accounts for the Variation in Retirement Wealth among US Households?" *American Economic Review* 91:4, 832-57

Hurd, Michael and Susann Rohwedder. 2003. "The Retirement Consumption Puzzle: Anticipated and Actual Declines in Spending at Retirement." NBER Working Paper No.9586. Cambridge, MA.: National Bureau of Economic Research.

Juster, F. Thomas and Richard Suzman. 1995. "An Overview of the Health and Retirement Study." *Journal of Human Resources*, Vol. 30, Supplement, pp. S7-S56.

Munnell, Alicia H. and Mauricio Soto. 2005a. "What Replacement Rates Do Households Actually Experience in Retirement? CRR Working Paper No. 2005-10. Chestnut Hill, MA: Center for Retirement Research at Boston College

Munnell, Alicia H. and Mauricio Soto. 2005b (forthcoming). "Sorting Out Social Security Replacement Rates." Just the Facts on Retirement Issues # 19. Chestnut Hill, MA: Center for Retirement Research at Boston College

Palmer, Bruce A. 2001. "2001 GSU/AON RETIRE Project Report." *Research Report Series* No. 01-1 (June).

University of Michigan. 1992-2002. *Health and Retirement Study*. http://hrsonline.isr.umich.edu

U.S. Social Security Administration. 2004a. *Income of the Aged Chartbook, 2002*. Washington DC: Government Printing Office.

U.S. Social Security Administration. 2004b. *Performance and Accountability Report, Fiscal Year* 2004. Washington, DC: Government Printing Office.

U.S. Social Security Administration. 2005. *Annual Report of the OASDI Trustees.* Washington, DC: Government Printing Office.

CENTER FOR
RETIREMENT
RESEARCH
AT BOSTON COLLEGE

About the Center

The Center for Retirement Research at Boston College was established in 1998 through a grant from the Social Security Administration. The Center's mission is to produce first-class research and forge a strong link between the academic community and decisionmakers in the public and private sectors around an issue of critical importance to the nation's future. To achieve this mission, the Center sponsors a wide variety of research projects, transmits new findings to a broad audience, trains new scholars, and broadens access to valuable data sources. Since its inception, the Center has established a reputation as an authoritative source of information on all major aspects of the retirement income debate.

Affiliated Institutions

American Enterprise Institute
The Brookings Institution
Center for Strategic and International Studies
Massachusetts Institute of Technology
Syracuse University
Urban Institute

Contact Information

Center for Retirement Research
Boston College
Fulton Hall 550
Chestnut Hill, MA 02467-3808
Phone: (617) 552-1762
Fax: (617) 552-0191
E-mail: crr@bc.edu
Website: http://www.bc.edu/crr

The research reported herein was pursuant to a grant from the U.S. Social Security Administration (SSA) funded as part of the Retirement Research Consortium. The findings and conclusions expressed are solely those of the authors and do not represent the views of SSA, any agency of the Federal government, or the Center for Retirement Research at Boston College.