Who is Ready for Retirement, How Ready and How Can We Know?

Sophie Korczyk, Ph.D.

Analytical Services

Research Report

AARP

Who is Ready for Retirement, How Ready, and How Can We Know?

by
Sophie Korczyk, Ph.D.
Analytical Services

AARP's Public Policy Institute informs and stimulates public debate on the issues we face as we age. Through research, analysis and dialogue with the nation's leading experts, PPI promotes development of sound, creative policies to address our common need for economic security, health care, and quality of life.

The views expressed herein are for information, debate, and discussion, and do not necessarily represent official policies of AARP.

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Introduction

As the baby boomers—the largest generation in U.S. history—start to leave the workforce, both policymakers and researchers are increasingly interested in the living standards this generation can expect in retirement. Many of the economic and demographic issues surrounding the aging of the baby boom are well known. Poverty rates among both elderly and nonelderly adults have declined during the baby boom's lifetime. Lower poverty rates before retirement increase the options people have in retirement.

Replacement rates and the adequacy of baby boomers' savings are important for at least two reasons. First, baby boomers need to understand replacement rates and savings adequacy measures to make the retirement decisions that will best suit their needs. Second, if the baby boom is poorly prepared for retirement, the much smaller generation following it could face crushing economic burdens, and policymakers will have to deal with the issues these burdens raise.

Purpose of the Report

A large and growing literature has addressed ways of measuring retirement income adequacy. The principal purpose of this report is to examine these measures as illustrated in selected recent additions to this literature, with special attention to the baby boom. The report compares and contrasts the questions posed in this literature, the definitions of adequacy used, the studies' conclusions, and the databases and models used in each study. A secondary purpose is to examine the implications of these studies for the baby boomers' retirement prospects.

Methodology

This paper examines and compares several recent studies—dating from 2003 or later—that deal with measuring retirement income adequacy. It shows how different studies, using different methods, approach and resolve the same or similar questions. Many of these studies use innovative methods of assessing retirement income and savings adequacy, so it is of particular interest to compare their results with conclusions based on earlier work.

The literature considered in this report falls into three broad categories. Some researchers have projected retirees' likely retirement income in relation to various measures of the income they earned before retirement. These studies calculate a retirement income replacement rate that is intended to indicate whether baby boomers will be able to maintain their living standards in retirement. Other researchers have compared the baby boomers' likely economic position with that of their parents' generation at the same age. The third category of studies assesses future retirees' asset accumulation patterns and likely savings at retirement.

The paper presents the results of these studies organized according to the following topics:

- Retirement income replacement rates, for Social Security benefits and for all retirement income sources together;

- Savings and wealth adequacy for retirement;

- Intergenerational wealth, income, and poverty comparisons;

- Well-being at retirement by marital status;

- Well-being at retirement by educational level; and

- The role of housing equity and imputed income in retirement income projections.

Empirical Findings

There is no one "right" way to measure or predict the adequacy of retirement preparation. Some approaches are more rigorous in economic and statistical terms, while others are more intuitive. The best approach to understanding retirement income adequacy seems to be an inclusive and multifaceted one that takes information from various sources and attempts to either derive a consensus or identify contradictions.

Replacement rates. Replacement rates are the simplest way to approach the issue of retirement preparedness. They are easy to explain and understand and, properly used, can encourage better retirement planning. Consider a prospective retiree who needs 70 percent of preretirement income to maintain her living standard in retirement. She can evaluate the effects of taking a part-time job, working longer at her current job, or perhaps moving to a smaller residence fairly easily with respect to this target rate.

But replacement rates have important limitations. Some of the very factors that can make replacement rates a good financial education tool limit their uses for research and policy analysis. Replacement rates provide only a snapshot of income adequacy and do not account for changes in circumstances over time.

They also depend critically on the pre- and postretirement income components that are to be included in the calculation. Some of the key measurement issues in calculating replacement rates concern the treatment of housing assets and allowances for retirement risks such as those posed by investment markets, longevity, and health care costs and expenses. Most people do not act as if they consider their homes a retirement asset, though more may have to do so in the future. Finally, risks such as those related to investment returns, greater-than-expected longevity, and health care spending can dramatically increase the replacement rates most people will need in retirement. Rule-of-thumb replacement rates do not take account of such expenses.

Savings and wealth adequacy. Studies of savings and wealth adequacy are designed to determine how well workers' savings patterns align with their likely lifetime spending needs. This approach is

considered more comprehensive than other techniques. It has advantages over replacement rates in that it takes account of households' changing financial circumstances and choices over time. It can also be used to assess the future effects of such current decisions as working longer or saving more. Various studies using this approach use different measures of wealth and savings and different methods, but their results are generally similar—some prospective retirees are well prepared for a comfortable retirement, but those who are not have a good distance left to go.

Intergenerational comparisons. Some studies are designed to determine how well the baby boom will fare in comparison with previous generations, including their parents'. In general, these studies find that most baby boomers can expect to do better than their parents on many measures of well-being, though income inequality is projected to increase. Intergenerational comparisons as a way of evaluating retirement preparedness have an intuitive reasonableness in that economic growth and progress should mean that successive generations would do better than previous ones. However, such comparisons may be less interesting to baby boomers themselves. If their retirement incomes are not enough to maintain their own preretirement living standards, it may be scant comfort to remember that their parents lived on even less.

Vulnerable groups. On several measures of retirement income adequacy, entering retirement single is not a good idea. Single people (including those widowed, divorced, and never married) can expect replacement rates comparable to those of married couples. However, when the standard is adjusted to meeting their changing needs as they age, the median single person is almost certain to outlive his or her resources.

Educational attainment is also a marker for economic vulnerability. This is particularly true for those who have not completed high school. They can expect relatively high replacement rates in retirement, but this is a result of their lower incomes. They face a greater chance of outliving their resources than do other educational groups, but this probability is nowhere near as large as that for single retirees.

Retirees also need employer-based pensions to earn adequate replacement rates. Depending on the income measure used, replacement rates can be up to 10 percentage points higher for households with pensions than for those without.

The role of housing in retirement income. For most people, their home is their largest financial asset. However, most people see this asset as inviolate and illiquid and do not reduce their housing equity until well toward the end of their lives.

Baby boomers may not have this luxury. For many baby boomers, the value of housing equity will make the difference between a difficult retirement and one that generally maintains their preretirement living standards. However, there are few ways for older persons to turn their housing equity into retirement income. Reverse mortgages are aimed at this goal but face many market barriers to widespread acceptance. As a result, the market for reverse mortgages is currently very small, though it has been growing in recent years.

Conclusions

Prospects for the baby boom. While several studies considered in this report represent methodological innovations over prior work, the basic picture is consistent across the studies considered, and also with prior research. The news is generally good at both the top and the very bottom of the income distribution. At least half of prospective retirees, including the baby boom, can expect an adequate, and in some cases more than adequate, retirement; the other half may face difficulties. However, the studies that report such assessments do not take into account the investment, longevity, and health care spending risks future retirees can expect to face. Poverty rates among the elderly are also expected to decline over time, but the near-poor will still be vulnerable. Some baby boomers may never retire; a recent employer survey suggests that as many as one in four boomers will not retire because they will not be able to do so.

Boomers who think they are well prepared for retirement should also ask themselves some questions. Retiring early is a luxury they could be paying for—on the installment plan—for the rest of their lives. Early retirement means reduced Social Security benefits as well as reduced pension income. Some boomers may be able to return to work, either part- or full-time, if retirement turns out to be more expensive (or less interesting) than they had expected. But even boomers with strong credentials that make them desirable employees could find it harder to return to the workforce after a period away than to stay employed in the first place.

Public policy implications. The nation as a whole also has a stake in these decisions. The future impact of the baby boom on Social Security and Medicare is already well understood. But there are more effects that may not be as well appreciated. A core of baby boomers that faces serious economic needs—those with the least education, for example—could mean a large, new dependent population. At the other end of the income scale, various professions and sectors of the economy could be hard hit, losing both talent and institutional memory if boomers retire in the same patterns as preceding generations. These patterns suggest that public policy choices may have an important role in salvaging the retirements of at least some groups.

The following are among the policy options that could ease the baby boom's transition into retirement, both for boomers themselves and for the U.S. economy:

- Improved financial education, especially for older workers;

- An education campaign aimed at encouraging employers to hire and retain older workers as well as create attractive employment opportunities for them; and

- A commitment by governments at all levels to lead the way in encouraging older workers to work longer by promoting the availability of phased retirement, so-called "bridge" jobs, and part-time jobs.

Action on these fronts would not only solve some of the economic problems posed by the baby boom's impending retirement, but would also improve the efficiency of both financial and labor markets.

Improved financial education. Individual perceptions and access to information will play a major role in the baby boom's future. For example, none of the baby boomers will be able to retire at age 65 with actuarially unreduced Social Security benefits, and none of those born after 1960 will be able to retire with full benefits until age 67. Yet survey after survey has shown that many people who will be affected by the steady increase in the normal retirement age (NRA)—all those born after 1937—have no idea that the NRA is rising. Most people, of course, may not care that the NRA is rising because they expect to claim benefits much sooner. But since the actuarial reduction for early retirement is rising in tandem with the increases in the NRA, many early retirees may be committing themselves to a lower lifetime retirement income than they realize.

In contrast, misperceptions about Social Security seem to get entrenched in the public mind far more easily. For example, many people believe Social Security will not "be there" for them, even though eliminating the program—or even cutting out some groups—would face insuperable political obstacles. The Social Security Administration needs to launch an information campaign aimed at helping people, especially those near retirement, better understand their retirement options.

Private-sector financial education efforts do not seem to have been much better at reaching their intended targets. Many of these efforts are online, often as follow-ups to a workshop or other event. However, even though more employers are offering financial education, utilization by employees remains low. More research needs to be done on the financial education employees and consumers need, on standards of effectiveness for both workplace and general consumer education, and on the best ways to provide such education.

Older workers in the workforce. Many older workers want to work past prevailing retirement ages; others will probably have to work. But finding work may not always be easy. While age discrimination is illegal, for many older workers it is a fact of life. Older workers may be denied training opportunities, for example, if employers believe they may retire in the near future. However, older workers are generally more stable than younger workers, who may leave after a few years and use the same training to benefit their next employer.

Older workers also have more difficulty finding jobs than younger workers when they are displaced. For example, as of December 2006, the average unemployed worker age 20 to 34 had been out of work 14.5 weeks, but the average unemployed worker age 55 to 64 had been out of work 22.8 weeks.

The concept of workplace diversity is well established in the national consciousness. It may be time to place older workers under this umbrella.

Government leading the way. Agencies at all levels of government can lead the way in showing how employers can both meet the needs and use the talents of older workers. Many older workers may be interested in part-time work or "bridge" jobs that fill the gap between career work and retirement. But such jobs—part-time work in particular—are often poorly paid, with no benefits and few opportunities for advancement. The federal government has established many "flex-time" options for its employees; it could also devise new career paths to meet the needs of older workers.

The baby boom will retire—maybe sooner, maybe later, but it will retire. Some baby boomers will be unprepared for retirement and some will be underprepared, while some will simply be unwilling to retire. It is not too late for both government and the private sector to educate boomers about all their retirement options, nor is it too late for them to create a few more.

INTRODUCTION

As the baby boomers[1]—the largest generation in U.S. history—start to leave the workforce, both policymakers and researchers are increasingly interested in the living standards this generation can expect in retirement. Baby boomers who expect to fare well will likely retire early and enjoy spending their retirement income. But those with poorer prospects may also retire early, and then find that they miscalculated their retirement income prospects. Then the rest of the picture may not be so rosy. Some baby boomers may slide into straitened circumstances they never expected. As a result, they could press policymakers for expanded social insurance and transfer programs. At the very least, a large contingent of struggling baby boomers could make it difficult for policymakers to consider changes in Social Security and Medicare benefits that might be needed to keep these programs solvent.

The importance of this matter suggests that measuring retirement income adequacy for current and future retirees is an important research and public policy issue. But there are many ways to measure retirement income adequacy. This report has two major purposes:

o First, it examines the design and construction of various measures of retirement income adequacy as illustrated in recent additions to the growing literature on this topic. It compares and contrasts the questions posed in these studies, the definitions of adequacy used, the studies' conclusions, and the databases and models used in each study.

o Second, the report summarizes these studies' conclusions on how well prepared current retirees and near-retirees are for retirement and, to the extent possible, how prepared the baby boom generation is likely to be.

This paper includes studies examining both the prospects of the baby boom and the actual retirement experience of selected earlier generations.[2] In particular, many studies of retirement income adequacy rely on the Health and Retirement Study (HRS), an important longitudinal study. Because the HRS is a rich database for studies of aging and retirement income, it has become the gold standard in retirement research, and many of the metrics for measuring retirement income adequacy considered in this study have been developed on this foundation.

But the results of these studies have to be interpreted carefully when making projections concerning the baby boom. There is some evidence that baby boomers' financial behavior is not significantly different from that of prior generations (Congressional Budget Office [CBO] 2003).[3] To the extent that this is true, HRS-based analyses can illuminate questions that might otherwise be difficult to answer, including testing innovative ways to measure retiree well-being.[4]

---

[1] The baby boom is the generation born between 1946 and 1964. Those born between 1946 and 1954 are generally called the early baby boom, and those born between 1955 and 1964 are considered the late baby boom. For ease of computation, some studies cited in this report consider those born between 1946 and 1965 as the baby boom, making the early cohort those born between 1946 and 1955, and the late cohort those born between 1956 and 1965.

[2] For descriptions of the databases and models used in the studies cited in this report, see "Data Sources and Models."

[3] This point has been disputed, however; see U.S. Government Accountability Office (2006).

[4] A technical critique of the HRS or other databases or models is outside the scope of this report. However, because of the importance of the HRS to retirement research, it may be useful to point out that HRS team members are engaged in an ongoing effort to improve imputation procedures (Cao et al. 2005).

At the same time, however, the HRS has limitations as a guide to the baby boom's future. Particular caveats apply to the HRS generation born during the Depression era, the generation that is the subject of most of the HRS analyses considered in this paper. Most of this cohort has had the advantages of defined benefit plans and retiree health insurance. These benefits alleviate many of the uncertainties of retirement.

In contrast, the baby boom and later generations will depend on defined contribution plans for retirement income and most will not be covered by employer-sponsored retiree health insurance plans when they stop working.[5] And many of the defined benefit plans that continue to operate are being frozen or converted to cash-balance plans. While the papers discussed in this report are the most recent additions to the retirement adequacy literature to date, it can be argued that retirement uncertainties have increased even since some of the studies reviewed in this paper (dating from 2003 forward) were published.[6]

This report finds that the general conclusions from disparate approaches to measuring retirement income adequacy are surprisingly similar. Most current retirees and near-retirees can expect a comfortable retirement. Based on commonly accepted financial planning rules of thumb—the studies cited in this report find that at least half of baby boomers are also on track to a comfortable retirement. However, substantial numbers are not, and the gap between the haves and the have-nots is likely to be greater than in previous generations. Moreover, the relatively optimistic conclusions of some studies rest on highly restrictive assumptions and limited data. As a result, even some baby boomers who are not quite on the economic edge could be more vulnerable to adverse personal or economywide developments than these studies suggest.

BACKGROUND

Many of the economic and demographic issues surrounding the aging of the baby boom are well known.[7] Poverty rates among both elderly and nonelderly adults have declined during the baby boom's lifetime. Lower poverty rates before retirement increase the options people have in retirement.

Baby boomers forged different marriage patterns from those of their parents, marrying later, divorcing more frequently, and often not remarrying. These life choices will resonate for some generations to come. The fertility rate peaked at 3.8 children per woman in 1957, and most of these births were to women in their 20s. It then declined to a 50-year low of 1.7 children per woman in 1976, when the early wave of the baby boom was in its 20s (U.S. Centers for Disease Control and Prevention 2000). Thus, at the age when the baby boom's parents were having children, many in the baby boom were doing other things. One of these was continuing their education. This made the baby boom the most college-credentialed generation to that time; rather than children, the baby boomers were accumulating degrees.

---

[5] These issues are discussed in more detail later in this report.
[6] I owe this point to an anonymous reviewer.
[7] Butrica and Uccello (2004) summarize some of these issues in greater detail.

Generation X—those born between 1965 and 1976—includes many of the baby boom's children. If the baby boom is poorly prepared for retirement, this generation could face crushing economic burdens, and policymakers will have to address the issues these burdens raise.

The labor force could shrink dramatically—and soon—if baby boomers follow the retirement paths of earlier generations. For example, 72 percent of retired workers receiving benefits in 2004 claimed benefits between ages 62 and 64 (Social Security Administration [SSA] 2005, table 5.B8). The character of the workforce could also change as the baby boom retires. Both business leaders and policymakers are concerned about the brain drain that will result from impending baby boom retirements in professions and sectors as diverse as nursing, clergy, and civil service. Business executives have expressed particular concern about the information technology brain drain (Patton 2006). If labor productivity declines as a result, paying for the baby boom's retirement could be even more burdensome.

A substantial literature on retirement income and savings adequacy has emerged, particularly since the early 1990s. A report by the Congressional Budget Office reviewed 18 papers produced that focused on retirement preparedness (CBO 2003). This paper examines and compares several more recent studies—dating from 2003 or later—that touch on the baby boom generation's prospects. It shows how different studies, using different methods, approach and resolve the same or similar questions. Many of these studies use innovative methods of assessing retirement income and savings adequacy, so it is of particular interest to compare their results with conclusions based on earlier work.

The literature considered in this report falls into three broad categories. Some researchers have projected retirees' likely retirement income in relation to various measures of the income they earned before retirement. These studies calculate a retirement income replacement rate that is intended to indicate whether baby boomers will be able to maintain their living standards in retirement. Other researchers have compared the baby boomers' likely economic position with that of their parents' generation at the same age. The third category of studies assesses future retirees' asset accumulation patterns and likely savings at retirement.

This paper presents the results of these studies organized according to the following topics:

- Retirement income replacement rates, for Social Security benefits and for all retirement income sources together;

- Savings and wealth adequacy for retirement;

- Intergenerational wealth, income, and poverty comparisons;

- Well-being at retirement by marital status;

- Well-being at retirement by educational level; and

- The role of housing equity and imputed income in retirement income projections.

Some studies considered in this paper are discussed under more than one subject heading because the papers analyze more than one topic. Others may be discussed under only one category due to the way their author(s) may have chosen to present the research findings. To facilitate comparisons among tables, all the studies included in each table are arranged in alphabetical order based on the lead author's surname. This order may not be the same as the order in which the studies are discussed in the text.

REPLACEMENT RATES

Introduction

The retirement income replacement rate is one of the most basic concepts of both retirement planning and retirement research. The basic formula for calculating the replacement rate is simple. It is a fraction calculated as the ratio of income in retirement (numerator) to preretirement income (denominator). Since preretirement earnings are considered to represent the worker's preretirement living standard, most replacement rates use earnings as the denominator of the fraction. The result of this calculation indicates how much of an individual's working career earnings are replaced by various components of retirement income. The higher the value of this rate, the closer the match between preretirement and retirement income and the more likely the retiree is to be able to maintain his or her preretirement living standard.

This section begins with an explanation of Social Security (SS) replacement rates for hypothetical workers with artificially constructed work histories. These replacement rates are calculated by Social Security Administration (SSA) actuaries and constitute the benchmark for most discussions of the system's performance. The second part presents estimates of Social Security replacement rates for actual workers as calculated using various models, data sources, and demographic groups. The third part presents estimates of replacement rates based on all sources of retirement income. The final part discusses issues concerning the validity of replacement rates as both retirement planning targets and as benchmarks for evaluating the performance of the retirement income system.

Social Security Replacement Rates: Hypothetical Workers

Both financial planners and researchers have long accepted a replacement rate of 70 to 80 percent as providing an adequate standard of living for most retirees, reflecting lower spending and savings needs in retirement, as well as lower tax burdens (see further discussion of this target replacement rate later in this section). Social Security benefits make up a substantial share of this amount. Social Security is and will remain a major source of retirement income for most Americans—and for some, the only source. In 2004, more than one in five retirement-age households relied on Social Security benefits for all their retirement income, and two-thirds relied on Social Security benefits for half or more of their retirement income (SSA 2006a).

The most basic Social Security replacement rate is the rate based on the earnings histories of hypothetical workers.[8] The Social Security benefit formula is applied to the earnings histories of these workers, resulting in a ratio of benefits to the hypothetical worker's average indexed monthly earnings (AIME).[9]

Until 2001, these histories were based on hypothetical steady workers, who earned a constant percentage of the SSA's average wage index (AWI)[10] throughout their careers. This approach did not take account of the fact that earnings differ by age. To take account of this problem, the SSA Office of the Chief Actuary developed scaled worker hypothetical earnings profiles in 2001. In these profiles, workers' earnings as a share of the AWI vary by age. There are four profiles of hypothetical career-average earnings levels:[11]

- Very low workers, earning 25 percent of the AWI;

- Low workers, earning 45 percent of the AWI;

- Medium workers, earning 100 percent of the AWI; and

- High workers, earning 160 percent of the AWI.

These profiles are hypothetical constructs used to explain the performance of the Social Security system. They are not intended to represent real workers. Accordingly, the scaled profiles do not take into account things that can happen to real workers, such as periods of zero earnings (Munnell and Soto 2005).

Nevertheless, replacement rates for these hypothetical workers can provide a base or anchor for understanding replacement rates earned by real-world workers. The "medium" worker retiring in 2007 would earn a replacement rate of 41.5 percent of AIME (table 1). Corresponding rates for low- and high-scaled profiles are 56.0 percent and 34.6 percent, respectively (not shown).

Social Security Replacement Rates: Real Workers

It is generally agreed that replacement rates based on the scaled profiles understate actual replacement rates (see, for example, Clingman and Nichols [2006], Mitchell and Phillips [2006],

---

[8] This explanation relies on Clingman and Nichols (2006).

[9] To compute an insured worker's benefit, the SSA first uses the national average wage index (AWI) to adjust, or index, the worker's career-long earnings for the change in general wage levels that occurred during the worker's years of employment. Such indexation ensures that a worker's future benefits reflect the general rise in the standard of living that occurred during his or her working lifetime. Indexed earnings for the highest 35 such years are then summed. This sum is divided by the total number of months in those years. The result is the average indexed monthly earnings.

[10] The AWI calculation includes only earnings up to the taxable maximum for payroll tax purposes, reflecting its use in the calculation of Social Security benefits. For a more extensive explanation of the AWI, along with historical values, see www.ssa.gov/OACT/COLA/AWI.html.

[11] The career-average earnings levels are specified percentages of the AWI for the four types of hypothetical earners. In contrast, career-average earnings are the 35 highest years of a Social Security beneficiary's earnings that are used to calculate the AIME.

and Munnell and Soto [2005]). Replacement rates based on the hypothetical earnings profiles tend to be lower because the underlying earnings profiles tend to be higher than for actual workers.

Accordingly, real-world, or sample-based, replacement rates can provide a better indication of the replacement rates today's retirees are actually receiving, and what baby boomers can expect in retirement. These rates can differ widely according to the definition of the replacement rate, the demographic group considered, and the model or database used.

Model of Income in the Near Term (MINT) estimates. Butrica, Iams, and Smith (2003, 2003/2004) calculate replacement rates for selected birth cohorts using the SSA Model of Income in the Near Term (MINT). They define the retirement income replacement rate as the ratio of income at age 67[12] to shared lifetime earnings[13] for the median 10 percent of retirees ranked by retirement income replacement rates at age 67. The median 10 percent includes the 45th to 55th percentiles. Accordingly, 45 percent of the population would achieve lower replacement rates, and 45 percent would achieve higher replacement rates, than those predicted for the median 10 percent of retirees.

Using their definition of replacement rates, the authors find that median retirees in the baby boom generation can expect substantially lower Social Security replacement rates than those calculated using the scaled medium worker profile.[14] Early baby boomers—those born in 1946–1955—can expect Social Security replacement rates of 32 percent at retirement (table 1). The later boomers, born in 1956–1965, can expect slightly lower replacement rates of 31 percent.

Alternative replacement rate denominators. Mitchell and Phillips (2006) calculate alternative Social Security replacement rates for the median 10 percent of wage earners in the 1936 birth cohort. They rank this cohort by wage earnings as of its normal retirement age, rather than by replacement rates at retirement, as do Butrica et al. Because Mitchell and Phillips study a cohort that is substantially older than the baby boom, replacement rates in this cohort do not say much about replacement rates the baby boom can expect. However, these results indicate the importance of the choice of numerator in determining the order of magnitude of replacement rates.

The replacement rates calculated by Mitchell and Phillips cover a range of more than 22 percentage points (table 1). The replacement rate using the worker's own AIME is 54.6 percent. Using the worker's own average lifetime pay in inflation-corrected dollars yields a somewhat higher rate of 55.6 percent. This difference is likely due at least in part to the inclusion of lower earnings beyond the high-35 included in the calculation of the AIME. Using the worker's own last five years of earnings could lead to high replacement rates to the extent that those years coincide with the worker's own career-peak earnings. However, the replacement ratio falls to 40.8 percent under this formulation. Mitchell and Phillips attribute this low replacement rate to the fact that HRS workers' earnings continued to rise over this period.

---

[12] The authors chose age 67 for this calculation because almost all people eligible for Social Security have claimed benefits by this age. This is *not* the same as assuming that all workers work to age 67.

[13] Shared lifetime earnings are defined as the average of wage-indexed shared earnings between ages 22 and 62. Shared earnings are computed by assigning each individual half of the couple's total earnings when the individual is married plus his or her own earnings in the years not married.

[14] The scaled worker profiles, which are updated annually, are intended to represent hypothetical workers retiring in each year (Clingman and Nichols 2006).

The Social Security system ties benefits to the worker's own earnings history, but it is also possible to calculate replacement rates with respect to measures of national earnings. Replacement rates that use national earnings compare the retiree's standard of living with that prevailing in the economy as a whole. This adequacy standard is used in many other countries, particularly European countries.

Social Security replacement rates based on measures of national earnings are the lowest of those calculated by Mitchell and Phillips. The replacement rate relative to average national earnings over the worker's career—assumed to extend from 1957 to 2000—is only 35.2 percent. This difference reflects in part the way the AIME is calculated. While the AIME includes only earnings up to the Social Security payroll tax minimum, national earnings include all earnings. The lowest of these alternative replacement rates—32.5 percent—is the ratio of benefits to economywide average earnings at the point of retirement.

New beneficiaries. Finally, Munnell and Soto (2005) and SSA (2004) calculate actual Social Security replacement rates for new beneficiaries. Using the HRS, Munnell and Soto find a replacement rate of 40.6 percent for the median retired-worker beneficiary in 2002. This can be compared with the replacement rate for new beneficiaries calculated in the same year in SSA (2004). Using the 1 percent Continuous Work History Sample supplemented by information from the Social Security Master Earnings File, that study found a median replacement rate of 42.1 percent (table 1).

In short, no single Social Security replacement rate represents what baby boomers can expect to receive. The baby boom can probably expect lower replacement rates than those calculated by SSA for current new beneficiaries unless they work longer than previous generations. The single most important reason replacement rates can be expected to decline in the future is that baby boomers will face the brunt of the transition to scheduled increases in the Social Security normal retirement age (NRA), with the accompanying increase in the actuarial penalty for accepting early retirement benefits (SSA 2004).

Replacement Rates from All Retirement Income Sources

Most retirees will have income from sources in addition to Social Security, such as pensions and individual retirement accounts (IRAs). Projections of income from all sources are particularly important in the case of the baby boomers. This is the generation that bore the brunt of the shift from defined benefit plans to defined contribution plans. This change took place over the course of the baby boomers' prime earning years. In 1977, when the oldest baby boomers were 31, there were 2.72 defined benefit plan participants for every defined contribution plan participant. By 2003, when the oldest baby boomers were 57 years old, the ratio had almost reversed; there were 1.58 defined contribution plan participants for every defined benefit plan participant.[15] The baby boom thus potentially faces a less secure retirement than previous generations, since the employee is primarily responsible for the outcomes in defined contribution plans.

One of the concerns about the shift to defined contribution plans is that retirees who overestimate their resources, underestimate their future consumption needs or longevity, or simply plan badly

---

[15] Author's calculation based on U.S. Department of Labor (1999). These data are based on the annual Form 5500 returns plan sponsors file with the Department of Labor.

during their careers could run out of money late in life. Under defined benefit plans, this would be a lesser concern, since defined benefit plans pay out benefits as an annuity over the participant's lifetime.[16] Of necessity, most of the studies discussed in this report assume that most or all financial resources available at retirement—including defined contribution plan balances—are annuitized, or converted into periodic benefit payments that continue for the life of the participant.[17] To the extent that beneficiaries do not annuitize their assets or spend them before retirement, the replacement rates calculated in these studies would generally overstate the replacement rates the baby boom is likely to earn and understate the likely decline in replacement rates between the baby boom and previous generations.

As in the case of Social Security replacement rates, overall replacement rates differ substantially on the definitions of pre- and postretirement income and on the models and databases used. Butrica et al. (2003, 2003/2004) define the replacement rate as the ratio of income at age 67 to shared lifetime earnings[18] between the ages of 22 and 62 (table 2). This measure of lifetime earnings over the worker's adult life accounts for time out of the workforce for family care or unemployment, as well as lower earnings both at the beginning and end of the work career. The authors project fairly substantial replacement rates of about 80 percent for the median 10 percent of the two baby boom cohorts. However, these replacement rates do not leave retirees any cushion for meeting unexpected expenses or other risks in retirement.

As an alternative, it is possible to base replacement rate calculations on income earned several years before retirement. The argument for using such years is the reverse of the argument for using lifetime earnings. Using lifetime earnings in the denominator of the replacement fraction takes account of possible reductions in work effort in the years immediately prior to retirement, while using only earlier years can better represent the living standard to which retirees may have become accustomed (Butrica and Uccello 2004). Butrica and Uccello's results, based on the DYNASIM model, show that the replacement rate for late baby boomers is about the same based on earnings at ages 50–54 as the rate calculated based on lifetime earnings, while the rate for the early boomers is closer to that of preceding generations (table 3).[19]

Holden and VanDerhei (2002) model future replacement rates that selected age groups can expect to receive from their 401(k) plans. They define the 401(k) replacement rate as the ratio of the annuitized value of 401(k) balances to the participant's final five-year average earnings (table 2). They present the median replacement rate by the final five-year earnings quartile for the 1955–1959 birth cohort, assumed to retire at age 65.[20] They study a high job tenure sample from the EBRI/ICI

---

[16] If the participant does not elect a joint and survivor annuity, however, the benefits will die with the participant, and the surviving spouse could outlive his or her retirement resources.

[17] The model used in Holden and VanDerhei (2002) allows for 401(k) plan participants who cash out their plan balances upon changing jobs rather than rolling them over into an individual retirement account (IRA) or their next employer's 401(k) plan.

[18] Butrica et al. define shared earnings as the average of wage-indexed shared earnings between ages 22 and 62. Shared earnings assign each individual half the couple's total earnings while married and his or her own earnings when not married.

[19] Butrica and Uccello report that using the lifetime measure of earnings in their calculations increases project rates to substantially higher levels than those in Butrica et al. (2003, 2003/2004).

[20] Holden and VanDerhei also present other replacement rates for other cohorts that do not overlap with the baby boom. These replacement rates are not presented here.

Participant-Directed Retirement Plan Data Collection Project. The high-tenure sample reduces the problem caused by 401(k) plan accumulations from prior employers; not accounting for such balances would tend to understate the replacement rate 401(k) plans can yield. Holden and VanDerhei assume that all 401(k) balances are annuitized at retirement.

Their baseline estimates assume that the employee works a continuous career, is always covered by a 401(k) plan, and never takes a loan or preretirement distribution from the account.[21] Under these baseline assumptions, the median replacement rates by final five-year earnings quartile range from 58 percent in the lowest quartile to 75 percent in the highest quartile (table 2). Therefore, even given the lowest Social Security replacement rate presented in table 1—31 percent—this segment of the younger baby boom can expect replacement rates ranging from 89 percent to 106 percent, even without considering other potential sources of retirement income such as IRAs, defined benefit plan benefits, and nonretirement savings.[22] Thus, it appears that just 401(k) plan distributions and Social Security benefits alone could provide at least the more fortunate baby boom retirees some income as a cushion against retirement uncertainties.

The studies considered to this point have not separated baby boomers or retirees by sector of employment. Martin (2003/2004) compares replacement rates of employees of medium and large private establishments with those of federal employees covered under the Federal Employees Retirement System (FERS).[23] She calculates the benefits of employees retiring at age 65 in 2002 with 35 years of service, using the Social Security steady-worker profiles. These results are for hypothetical workers and thus do not incorporate real-world labor force experiences such as unemployment or gaps in pension coverage. The oldest baby boomers would have been almost a decade younger than the hypothetical workers considered here, but many of the underlying parameters of these estimates are likely to remain stable over such an interval.

Both the FERS worker and the private-sector worker are assumed to have benefits from Social Security, a defined benefit pension, and a defined contribution plan throughout their careers.[24] Under these assumptions, the private and federal workers earn similar replacement rates, and both sets of replacement rates are substantial. For private workers, the replacement rates range from 147 percent for the low earner to 110 percent for the worker earning the maximum amount subject to payroll taxes for his or her entire working career. For federal workers, the corresponding rates range from 146 percent to 108 percent.

To summarize, studies of replacement rates based on a broad selection of income sources suggest that the typical, or median, recent retiree has fared quite well compared to his or her preretirement living standard, and that the typical baby boom retiree may do likewise. However, some of the

---

[21] They do allow for the possibility that a small number of participants will not make contributions—or receive employer contributions—in any given year. They also calculate estimates under less restrictive assumptions than those detailed above. These estimates are not reported here.

[22] Brady (2006) presents simulations for persons assumed to be born on January 1, 1966. Like Holden and VanDerhei, he finds that 401(k) plans, even at moderate contribution rates, can provide adequate asset accumulation and retirement income replacement rates for most demographic groups.

[23] Martin also computes replacement rates under the Civil Service Retirement System (CSRS), which preceded FERS and which still covers some federal employees hired in 1983 or earlier. Those rates are not presented here.

[24] For FERS, she uses the actual annuity formula. For private-sector plans, she uses a terminal earnings-based formula based on data presented in U.S. Bureau of Labor Statistics (2000).

more optimistic results presented here are calculated under fairly restrictive assumptions, such as continuous work careers. In addition, many of today's workers will face higher medical costs than current retirees or near-retirees as Medicare costs increase and employer-sponsored retiree health plans become less common. Most projection models do not take account of such factors.[25]

Replacement Rates: Too Much, Too Little, or Just Right?

Many researchers consider the 70–80 percent replacement rate "the answer"—it is seen as the goal that both workers and researchers should seek. In this approach, as long as workers reach this goal, they will meet their needs, and as long as most workers are on track toward this goal, researchers can conclude that most retirees are prepared for retirement.

This rule-of-thumb replacement rate is calculated in a fairly simple way. It reflects the assumption that retirees will not need 100 percent of their preretirement income in retirement because they will no longer incur certain work-related expenses. For example, they will no longer need to pay for work-related clothing, meals, and commuting costs; their tax payments will be lower, reflecting both their (generally) lower incomes as well as federal, state, and local tax preferences for retirement income; and they will have less need to save for retirement.[26]

Because the rule-of-thumb rate is derived so simply, it is also easy to explain to people whose educational backgrounds and current interests may not include statistics and probability theory, but who need a usable guide to govern their retirement planning. People are more likely to follow a simple mandate—such as "eat five fruits and vegetables a day"—than a directive to keep track of all the nutrients in their diet and adjust the diet accordingly. Similarly, ordinary, busy people can understand that both their incomes and expenses are likely to change after retirement, and that their comfort in retirement is likely to depend on which changes more.

But replacement rates may not be adequate either as a measure of the retirement income system's performance or as a guide for individual financial planning. One problem is that replacement rates do not specify an absolute income adequacy standard. Accordingly, this approach may lead one to conclude that a working person living in poverty who is equally poor after retirement has achieved an adequate retirement income so long as the person's replacement rate is sufficiently high (CBO 2003).

Another problem with the replacement rate is that it has no unique time dimension. Preretirement income may be calculated on the last day before the prospective retiree leaves the workforce, even though his or her late career earnings may represent a substantial decline in work effort and earnings compared with earlier years. Likewise, postretirement income may be calculated as of the first day of retirement, ignoring the possibilities that some retirement income sources may run out or lose purchasing power during the retiree's lifetime, that investment markets may perform poorly, or that new consumption needs, such as increased medical expenses, may emerge. Finally, the rule-of-thumb replacement rate is typically a rate that the typical (either mean or median) household can

---

[25] For an exception, see results reported in VanDerhei (2006), discussed in the next section.
[26] See CBO (2003) and Munnell and Soto (2005) for a more detailed list of such factors.

achieve. The prospective retiree may be as likely to undershoot as to overshoot this target, depending on how his or her retirement plays out.

Given these weaknesses of replacement rates as a measure of retirement readiness, some researchers have suggested that the long-used rule of thumb may be the wrong answer to the retirement readiness question, and indeed, have wondered whether there even is one right answer that will fit most people's circumstances.

Postretirement changes in medical benefits alone can increase required replacement rates substantially for households wanting to maintain their preretirement lifestyles in retirement. As an example, required replacement rates could increase by as much as 12 percentage points (from 89 percent to 101 percent) for persons retiring at age 65 in 2004 with a preretirement income of $20,000 under a worst-case assumption about health care coverage and expenses in retirement (Aon/Georgia State University 2004).

If investment longevity risks are factored in along with the risk of catastrophic medical costs, most people may need even higher replacement rates (VanDerhei 2006). Unlike most models, the EBRI/ERF Retirement Security Projection Model® is able to account for this risk. Using this model, VanDerhei finds that a low-income male retiring at age 65 would need a replacement rate of 124 percent to have a 50 percent chance to avoid running out of money during his life span, a rate of 229 percent to reduce the risk of running out of money to 25 percent, and a rate of 394 percent to further reduce this risk to 10 percent.[27]

It has also been argued, however, that some households may save too much (Kotlikoff 2006). In this view, a rule-of-thumb approach to retirement planning may not take account of the adjustments households can make to ensure that their retirement resources fit their needs. For example, retiree households may not stick rigidly to spending levels set during their working years but may, instead, spend less on some things if their circumstances worsen due increased health care spending needs or a decline in investment returns. They could also change their housing decisions or decide to work longer. If these and other potential responses are taken into account, households who prepare for retirement based on a rule of thumb could save from one-third to three-quarters more than they need to maintain their living standards in retirement.

To summarize, there is no one agreed-upon way to calculate replacement rates, whether for an entire birth cohort, such as the baby boomers, or for an individual. Disagreement may result from one or more of several causes. First, different financial planners and researchers may include different income components in both the numerator and the denominator of the replacement rate. Second, the items included in each part of the calculated ratio can themselves be calculated in a number of different ways, which can influence the calculated value. Finally, both the numerator and the denominator can be calculated over a number of time periods, ranging from the actual point when the retiree leaves the workforce to the entire work career and retirement. There is also no agreement that, even given their broad use, replacement rates mean quite as much as those who use them might like.

---

[27] These target replacement rates are reduced if it is assumed that the participant invests some part of his or her portfolio in equities and annuitizes at least a portion of initial retirement wealth.

SAVINGS AND WEALTH ADEQUACY AT RETIREMENT

Studies projecting replacement rates attempt to understand the results of the economic processes that determine whether people will have enough to live on in retirement. Those examining savings and wealth adequacy, in contrast, examine the process by which households accumulate retirement income assets.

Engen, Gale, and Uccello (2005) derive optimal wealth accumulation patterns for households in a stochastic life-cycle model that allows for uncertainty in earnings and mortality. This means that similar households may have different ratios of wealth[28] to earnings, even if every household is forward looking and makes optimal choices. This approach is a departure from many other models that assign the same optimal wealth-earnings ratio to all households with the same features.

Their research results are reported as the ratio of current wealth to lifetime earnings to date. The results of their simulations can be used to determine how many households have wealth to earnings ratios that exceed the median ratio for similar households. However, because each household is assumed to be responding rationally to a different profile of economic shocks, their model does not identify households that are saving adequately or inadequately.

Using their stochastic model as a benchmark, one would expect only 50 percent of households to exceed the benchmark wealth-to-earnings ratio. Engen et al. find instead that household wealth-to-lifetime-earnings ratios exceed the simulated medians in all lifetime earnings quartiles. In the first income quartile, 53 percent of households have wealth-to-lifetime-earnings ratios exceeding the simulated median; this share rises to 72 percent in the highest quartile (table 3). Higher-earning households are thus saving substantially more than the simulated median, while households in the lower quartile just make the cut. These results are consistent with those of many studies discussed in this report as well as in the broader literature on retirement income adequacy; while the median household is preparing well for retirement, at least a quarter of households risk being unprepared.

The model developed by Engen et al. cannot be used to derive optimal wealth values for specific households. Scholz, Seshadri, and Khitatradun (2006) develop a stochastic model that calculates household-specific wealth targets for HRS respondents in the first (1992) wave of the survey.[29] They find that over 81 percent of households meet or exceed their wealth targets (not shown in table), and that shortfalls, where they occur, are small. In absolute terms, median shortfalls—conditional on a household's having a shortfall—range from a low of $2,875 for households in the lowest earnings decile to $28,319 for those in the highest deciles (table 3). They conclude, therefore, that there is "strikingly little" evidence that HRS households have undersaved for retirement.

---

[28] Engen et al. present their results according to three definitions of wealth. The results discussed in this report are based on their "broad" wealth measure, defined as the sum of equity in the primary residence, other real estate equity, equity in businesses, and net financial assets. Financial assets include accumulations in defined contribution retirement plans. Wealth excludes Social Security and defined benefit pension benefits.

[29] They define wealth as the sum of a comprehensive measure of net worth, plus Social Security benefits and defined benefit pension wealth.

However, the nearly 19 percent of households with wealth shortfalls could face grim circumstances in retirement. Roughly one in three households in the bottom two earnings deciles can expect a wealth shortfall during retirement, compared with fewer than one in ten in the top two deciles (table 3).

And, while the shortfalls are generally small in absolute terms, they appear to be much larger in relative terms. Assuming that the household with the median optimal wealth target also faces the median deficit, the deficit for the median household in the lowest decile ($2,875) exceeds that household's median wealth target by 40 percent (calculation based on table 3). Ratios in other lower deciles, while not as burdensome, are still fairly daunting—the household in the fourth decile faces a potential deficit of over 11 percent. In short, while Scholz et al. report fairly optimistic results for the HRS generation, the subtext of their results is that things could go pretty badly for a substantial minority of retirees.

COMPARING GENERATIONS

The papers discussed above have focused on absolute measures of the baby boom's likely future well-being, as well as on hints for the baby boom that the fate of previous generations may provide. This section discusses studies designed specifically to compare the baby boom's well-being with those of earlier birth cohorts, including, in some cases, their parents'.

Comparing Income

In this section, we compare the results of three approaches to intergenerational income comparisons.

Median per capita family income.[30] The first approach compares median per capita family income at age 67 by ten-year age cohort (from 1926 to 1965) and by income quintile within each cohort (Butrica et al. 2003, 2003/2004). In both baby boomer cohorts and in each income quintile, baby boomers are projected to be better off at age 67 than the two cohorts preceding them were at the same age (table 4). Median per capita family income is projected to increase even in the lowest income quintile, rising from $9,000 in the 1926–1935 cohort to $12,000 in the 1956–1965 cohort.

The various quintiles will gain over their predecessors at dramatically different rates, however. Late baby boomers in the highest income quintile will see an 80 percent increase over the 1926–1935 cohort, or more than 2.5 times the projected increase in the over the same cohorts in the lowest income quintile (calculations based on table 4). Income inequality is thus projected to increase over the four birth cohorts considered, rising from a sixfold difference between the lowest and highest quintiles in the oldest cohort to a more than eightfold difference in the youngest cohort.

While baby boomers as a group are projected to do better than preceding generations, per capita incomes are not expected to change substantially between the early and late cohorts. Incomes in the

---

[30] Income includes Social Security benefits, defined benefit pension benefits, annuitized income from nonpension, nonhousing assets and retirement accounts, earnings, and Supplemental Security Income (SSI) benefits. It does not include imputed rental income or coresident income.

lowest three quintiles are projected to remain virtually unchanged between these two groups. Income in the fourth quintile is projected to increase by 6 percent, while that in the fifth quintile is projected to increase by 13 percent.

Median household income.[31] The second approach uses the DYNASIM model to compare median household income at age 67, also by ten-year age cohort and by income quintile within each cohort (Butrica and Uccello 2004). Median household income displays substantially different growth trends from those found for median per capita family income. All four birth cohorts are projected to experience roughly similar rates of household income growth. These rates range from lows of 39 percent and 41 percent in the third and fourth quintiles, respectively, to 49 percent in the fifth quintile and 50 percent in the first and second quintiles (calculations based on table 4). As a result, the distribution of income is projected to remain roughly unchanged over the four cohorts, with all cohorts displaying roughly a sevenfold difference in income between the lowest and highest quintiles.

Income relative to average wages. The final approach we consider compares the ratio of per capita family income to the economywide average wage at specified ages for boomers and their parents. The 1926–1935 and 1936–1945 birth cohorts would include some, but certainly not all, of the baby boomers' parents. Manchester, Weaver, and Whitman (2006) directly compare the likely well-being of a segment of the baby boom (1950–1960 birth cohort) with that of those born between 1926 and 1936—a cohort that would include many of this baby boom segment's parents. The "parent" and "boomer" cohorts are compared when each is ages 62 to 72—1998 for the parents and 2022 for the boomers.

Manchester et al. then use the ratio of each generation's retirement income to the average wage in each generation's reference year to measure well-being. This ratio measures the degree to which retirees' standards of living have kept up with those of the working population. By this measure, the income distribution will become considerably more unequal between the parent and boomer cohorts. Baby boomers in the 10th and 25th percentiles will be about as well off in retirement relative to workers as were people in the same percentiles in their parents' generation (table 4). However, in both generations, both the 10th and the 25th percentiles represent fairly low living standards relative to workers in their generations; incomes of those in the 10th percentile were 23 percent of those of workers, and incomes of those in the 25th percentile were 40 percent of those of workers.

At the 50th percentile, things begin to look up for the baby boomers. Parents had incomes of about 70 percent of economywide wages, and boomers are projected to have incomes of about 75 percent of average wages. If current workers' incomes are seen as a proxy for retirees' own preretirement living standards, then the median retiree in both generations roughly meets the rule-of-thumb replacement rate of 70–80 percent. At the 75th and 90th percentiles, retirees outpace workers in both generations, and baby boomers in those percentiles gain substantially on their parents' generations.

---

[31] Income is derived from financial wealth, housing equity, Social Security benefits, defined benefit pensions, defined contribution plans and other retirement accounts, SSI benefits, earnings, spousal income, and coresident income.

Comparing Wealth

Butrica and Uccello (2004) compare both median household income at age 67 (see above) and median household wealth at age 67 among generations. They use the same model and population in both analyses.[32] While their analysis of median household income finds a largely unchanged income distribution between the boomers and preceding generations, their wealth analysis shows substantial gains for some quintiles but not for others. Wealth in the first quintile is projected to rise from $204,000 in the earliest cohort to $310,000 in the late baby boom cohort, for an increase of 52 percent (calculation based on table 4). Wealth in the three middle quintiles increases by roughly one-third, while that in the top quintile increases by two-thirds. Thus, unlike the case of income, the distribution of wealth is projected to change to favor both the highest and the lowest quintiles rather than those in the middle.

Comparing Poverty Rates

Intergenerational comparisons of income and wealth generally—though not uniformly—suggest that the baby boom will see a more unequal distribution of income and wealth than previous generations. With respect to poverty rates, the picture is both clearer and more optimistic, at least for the baby boom as a whole.

Percent in poverty. The share of people with retirement incomes below poverty levels is the most basic measure of poverty. Despite using different projection models and definitions of income,[33] both Butrica et al. (2003, 2003/2004) and Butrica and Uccello (2004) find that poverty rates will decrease substantially between the boomers' generation and their predecessors. The former study finds that the share of the elderly in poverty (using the Census Bureau's elderly poverty standard) will decline from 8 percent in the oldest cohort to 4 percent in the youngest cohort, while the latter projects a decline from 8 percent to 2 percent (table 5). But under both sets of estimates, poverty improvements are largest between the two older cohorts; the two baby boomer cohorts do not see much change.

Percent with incomes below twice the poverty standard. Poverty income provides an austere standard of living. Income at twice the poverty standard provides a somewhat more generous standard. Butrica and Uccello (2004) and Haveman et al. (2006) examine trends in this measure.

Butrica and Uccello find that the percentage of each cohort with incomes less than twice the poverty standard will decline from 32 percent in the oldest cohort to 15 percent in the late boomers' cohort (table 5). As in the case of poverty income, however, the largest improvements occur between the two older cohorts; the two baby boomer cohorts will see less change.

Haveman et al. compare the experience of the older HRS cohorts (those retiring in the mid-1990s) with those of participants in the New Beneficiary Survey (NBS) who retired in the early 1980s.

---

[32] Wealth includes financial wealth, housing equity, Social Security benefits, defined benefit pensions, defined contribution plans, and other retirement accounts.

[33] Butrica et al. consider only money income. Butrica and Uccello include both money income and annuitized income from financial assets.

While these cohorts are older than the baby boom or its immediate predecessors, their experience is of interest because the work careers of these cohorts are completed and therefore do not require projections of key variables such as preretirement incomes or retirement dates.[34]

Like Butrica and Uccello, they use a broad range of assets to generate annuitized retirement income. They then calculate the ratio of mean annuitized assets to both poverty income and twice poverty income. The results of this calculation measure the degree to which the average retiree household's income (or that of a sole retiree after the death of a spouse) will exceed the two poverty standards. They find that the average ratio of income to the poverty standard increased from 3.5 in the earlier cohort to 5.4 in the later cohort (table 5). The average ratio of income to twice the poverty standard also increased, rising from 1.8 in the older cohort to 2.7 in the younger cohort.

Ratio of income to the poverty standard. As explained earlier (see "Income relative to average wages," above), Manchester et al. (2006) calculate intergenerational comparisons using cohorts intended to represent a subset of baby boomers and the parents of the baby boomers. Their measure of poverty trends is the ratio of retirement income to poverty level income. Using this measure, all baby boomers will see some improvement in income relative to the poverty level, but some will see more than others. Boomers at the 10th and 25th percentiles are projected to be not much further from poverty than the same percentiles of their parents' generations (table 5). But at the 50th and higher percentiles, the improvements are substantial, with boomers at the 90th percentile projected to achieve retirement incomes of 18 times the poverty standard, compared with just over 10 times for the same percentile in their parents' generation.

What Intergenerational Comparisons Can Tell Us

Intergenerational comparisons of well-being provide some insights into the baby boom's future, because they suggest how the broad economic picture could change for boomers compared with prior generations. Economic principles and behavior that people learn from their families certainly influence their own behavior and expectations. For that reason, baby boomers may base their own retirement expectations on their parents' retirements.

However, boomers may want different things from retirement than either their parents or other previous generations did. For example, while some boomers' parents may have moved to live near their children or grandchildren, boomers can now use cell phones, e-mail, and webcams to maintain extended family relationships, giving them more flexibility in living arrangements. Some boomers' parents continued to live in the family home after retirement (those who did not move to Florida, that is). But some boomers may be more interested in living in larger urban areas than their parents did, particularly if they plan to develop new jobs, careers, or businesses in their later years, as many boomers say they plan to do.

Intergenerational comparisons thus share some of the weaknesses of replacement rates as ways to forecast the baby boom's future. There is no one objective, correct ratio of children's income or

---

[34] At the same time, however, it should be noted that the NBS cohort used in this study may not be strictly comparable to later cohorts due to shorter earnings careers considered for Social Security and lower maximum taxable earnings relative to national average wages than later cohorts.

wealth to that of their parents. Most intergenerational comparisons have to be interpreted in a broader context, such as replacement rates or changes in income inequality. As a result, such comparisons have little to say in themselves about what the baby boom can expect in retirement.

But the biggest weakness of intergenerational comparisons of retirement adequacy seems to be that people typically measure changes in their own circumstances using themselves, not others, as a reference point. Suppose a 50-year-old woman used to running marathons experiences a knee injury that ends her running career. The runner will find little consolation in the fact that her late mother *never* ran a marathon. Likewise, a 65-year-old retiree who experiences a precipitous drop in income and living standards after retirement may not care that he is still better off than his long-deceased parents were at his age.

MARITAL STATUS AND WELL-BEING IN RETIREMENT

The results presented to this point have been couched in terms of group or cohort means, medians, and percentiles. However, it is well known that economic well-being can differ dramatically by gender and other characteristics. Women remain among the most economically vulnerable; in 2004, 12 percent of women ages 65 or older were poor, compared with 7 percent of men (SSA 2006b).

Marital status is an even greater poverty risk than gender. In 2004, 4.5 percent of elderly married persons were poor, but for persons not married, poverty rates ranged from a low of 14.5 percent for those widowed to a high of 21.9 percent for those never married. Women again are at risk; with marriage rates declining among women, fewer older women will be eligible for Social Security spousal and/or survivor benefits as they age (Meyer, Wolf, and Himes, forthcoming).

This section presents three measures of well-being by marital status: replacement rates, poverty rates, and income adequacy.

Replacement Rates

For the baby boom, replacement rates by marital status are projected to differ substantially depending on the income benchmark chosen, as well as on the individual's or couple's pension status.

In the early baby boom, the replacement rate as measured by the ratio of per capita family income to shared earnings at ages 22–62 is projected to range from a low of 75 percent for never-married persons to a high of 90 percent for divorced persons (table 6). The results for the later baby boom are almost identical; replacement rates relative to career earnings are projected to remain unchanged between the two cohorts.

When the earnings benchmark is changed to earnings at ages 50–54—to better capture peak earnings years—the disparities become larger, both by marital status and by birth cohort. In the early baby boom, replacement rates range from a low of 81 percent for divorced persons to a high of

112 percent for widowed persons.[35] Replacement rates are projected to drop for all marital status groups among the late baby boomers, but the ordinal ranking remains the same. Replacement rates range from a low of 73 percent for divorced persons to a high of 101 percent for widowed persons. Marital status and birth cohort will thus make a big difference in the share of peak earnings baby boomers can expect to replace in retirement.

Replacement rates by marital status also depend on employer-provided pension status. Munnell and Soto (2005) find several patterns in analyzing replacement rates by marital and pension status using the HRS. They consider two definitions of preretirement reference income. The first is annuitized retirement income from all sources as a percentage of AIME plus earnings above the Social Security earnings cap plus the annuitized value of all assets ("AIME plus"). The second definition replaces AIME plus earnings above the Social Security cap with the top five years of earnings ("top-five plus") indexed for changes in the Consumer Price Index (CPI). Using these measures, they compare replacement rates by marital and pension status in the first year the retiree claims Social Security benefits.

Under both definitions, single persons with pensions earn higher median replacement rates than couples with pensions. This difference is 10 percentage points based on the AIME plus definition of reference earnings and 7 percentage points based on the top-five plus definition (table 6). As expected, replacement rates for all four groups are lower when the preretirement reference income is based on indexed high-five years of income rather than career-long income.

But under each income measure, both couples and singles without pensions can expect to receive roughly the same replacement rates. Under the AIME plus definition of preretirement income, median replacement rates for both couples and singles without pensions are 62 percent and 63 percent, respectively, both lower than for the same groups with employer-provided pensions. In short, for both couples and singles, employer-provided pensions make all the difference.

Poverty Rates

Not surprisingly, income adequacy measured in relation to various poverty standards also differs by marital status. Haveman et al. (2006) compare the ratio of annuitized net worth to two income adequacy standards, as measured by multiples of the poverty level. They consider individuals who first received Social Security benefits in the mid-1990s. They found that the average married household had an income 5.89 times the poverty standard and 2.95 times the twice-poverty standard (table 6). The average single household, in contrast, had an income of 4.35 times the poverty standard and 2.18 times the twice-poverty standard.

Income Adequacy

---

[35] Butrica and Uccello (2004) find that both widows and widowers have generally higher replacement rates than other marital status groups. Women's lower earnings and their greater longevity, which makes them more likely than men to be widowed, would thus not seem to explain the higher replacement rates for widowed persons.

Hurd and Rohwedder (2006) measure retirement income adequacy by defining an optimal level of wealth that will support projected life-cycle consumption needs. They start from the intuition that each person has an optimal lifetime consumption path. This consumption path allows for such factors as age and ways that households can trade off retirement leisure against spending. In exploring retirement income adequacy, they ask whether retirees can afford the optimal consumption path associated with the consumption level observed at retirement. In an innovative approach, they use information from the Consumption and Activities Mail Survey (CAMS) and the Consumer Expenditure Survey (CEX) to measure consumption on various goods and services directly by age and marital status. They then project spending levels and changes in spending based on these actual spending patterns. In this way, they can account for a household's changing needs or preferences over time, which a standard replacement rate approach to measuring retirement income adequacy cannot do.[36]

They then compare the projected lifetime value of this consumption path with the household's resources[37] at retirement. The relationship between these resources and the resources needed to finance consumption in retirement determines, though with substantial uncertainty, whether the household will outlive its resources given its consumption path or, alternatively, be able to leave a bequest.

Their results show that the typical couple is well situated over its projected retirement span. The average married couple is projected to have excess lifetime wealth of $434,800, while the median couple is projected to have excess wealth of $244,300 (table 6). Average excess wealth in the 40th to 60th percentiles is similar, at $248,700 (not shown in table).

Things look quite a bit grimmer for singles. The average single person is projected to have excess lifetime wealth of $63,500, while the median single person will have only $5,700. Average excess wealth in the 40th to 60th percentiles is $9,100 (not shown in table). The distribution of excess wealth is substantially more unequal among singles than among couples, but even singles above the median would seem to be vulnerable to adverse personal or economywide developments.

EDUCATIONAL LEVEL AND WELL-BEING AT RETIREMENT

Education can be a proxy for a number of retirement-related variables, including earnings, pension coverage, and ability—and possibly willingness to plan ahead for retirement.[38] In this section we consider the relationship between educational attainment and replacement rates, likelihood of being able to meet one's consumption needs in retirement, and retirement income in relation to poverty standards.

---

[36] Couples and single persons are treated somewhat differently. As long as both spouses survive, the couple follows a consumption path designed for couples. Once one spouse dies, the surviving spouse is switched to the consumption path of a single person.
[37] Resources are defined as Social Security benefits plus pension annuities.
[38] Whether a private-sector employee will work in a firm offering a pension plan is highly correlated with the employee's education level. As of 1999, the sponsorship rate was 33 percent for workers without a high school diploma, 56 percent for high school graduates, 61 percent for workers with some college education, and 74 percent for college graduates (U.S. Department of Labor [DOL] 1999).

Replacement Rates

The relationship between replacement rates and educational level is fairly consistent across models and retirement income definitions. Butrica et al. (2003) define replacement rates as the median ratio of per capita family income to average shared earnings at ages 22–62 (see "Replacement Rates from All Retirement Income Sources," above). They project that both baby boom cohorts will have a **U**-shaped replacement rate distribution by education level (table 7). Those who have not completed high school are projected to have replacement rates of 93 percent and 97 percent in the first and second cohorts, respectively (table 7). High school graduates in the two cohorts can expect replacement rates of 77 percent and 78 percent, respectively—lower than those without high school diplomas but well within the range of the commonly used target of 70–80 percent. Replacement rates rise again for college graduates, reflecting their higher incomes and better opportunities for saving. Probably due to the smoothed income measure Butrica et al. use, replacement rates do not change substantially between the first and second baby boom cohorts.

Butrica and Uccello (2004) define replacement rates in relation to career-peak earnings, defined as per capita shared earnings for ages 50–54 (see "Replacement Rates from All Retirement Income Sources," above). They also find a **U**-shaped pattern of replacement rates by education, though the **U** is somewhat shallower. However, their replacement rates decline substantially between the first and second baby boom cohorts.

Meeting Consumption Needs in Retirement

Using the model described earlier in the discussion of marital status and well-being in retirement, Hurd and Rohwedder (2006) calculate measures of excess wealth over retirement consumption needs for four educational groups: those with less than a high school diploma, those with a diploma, those with some college, and those with a college degree or more. As expected, excess wealth rises steadily with education level; those with at least a college degree are projected to have average excess wealth of $857,300, or more than four times the excess wealth projected for those without a high school diploma (calculation based on table 7). Having at least a college degree also represents the largest jump in excess wealth—a degree is worth almost twice as much as completing only some college.

Reflecting the inequality of wealth distribution within educational brackets, median excess wealth values are lower than average values within each education category. However, while lack of a high school diploma imposes a substantial penalty in retirement resources, this penalty is not even close to the penalty imposed on those who enter retirement single (table 7).

Poverty Rates

Finally, educational attainment increases the distance between an individual's income and the poverty level. Those with less than a high school diploma can expect an average retirement income

of just over three times the poverty rate and about one and a half times the twice-poverty standard (table 7). College graduates, in contrast, can expect incomes of more than eight times the poverty standard and more than four times the twice-poverty standard.

HOUSE-POOR OR JUST POOR?

> " 'My house is worth a million' is not a retirement plan."
> *Charles Schwab & Co. advertising poster, ca. 2005*

> "But They Don't Want to Reduce Housing Equity."
> *Venti and Wise (1990)*

For most Americans, their home is their most valuable asset. It is also the place where they live, raise children, entertain friends and family, and remodel the kitchen for what seems like the hundredth time. It is therefore not surprising that Americans have mixed feelings about treating their homes as financial assets—in particular, assets that can be used to finance retirement spending. Especially when housing prices rise, some see their homes as a gold mine, while, in the same circumstances, some see their homes as their one indispensable—and illiquid—asset.

The role of housing wealth in retirement savings has been subject to a number of interpretations. A complete review of the issues surrounding the role of housing in retirement planning is outside the scope of this paper, but this section briefly summarizes those issues.

Various authors have included anywhere from 0 to 100 percent of housing wealth in retirement spending.[39] Counting nothing, of course, implies that the housing equity of retirees is sacrosanct. Counting all of housing wealth, in turn, implies that imputed rental value of the home is zero. Sidestepping the issue entirely, Butrica and Uccello (2004) calculate the value of imputed rental income in arriving at their income measure, but do not include it in their published replacement rate calculations.

Munnell and Soto (2005) argue for a more precise treatment of home equity in the calculation of replacement rates. They suggest including the entire value of home equity in the numerator of the replacement rate calculation. This value consists of the present discounted value of imputed rent over the life of the household plus the residual value that could be accessible through a reverse mortgage. They include imputed rent on the grounds that it will be used to support retirement consumption. For consistency, they also include the imputed value of preretirement rent in the denominator of the replacement rate. They find that when these values are included in the calculation, median replacement rates for couples with pensions meet or exceed the 70–75 percent replacement rate standard (table 6).

In several papers, Venti and Wise (1990, 2001) present evidence that many home owners do not consider their homes as retirement assets. They find that most home owners do not tap their home equity for retirement income even when a spouse enters a nursing home or dies. And they find that

---

[39] Munnell and Soto (2005) provide a brief review of studies dealing with this topic.

in the absence of such a household crisis, many older households who sell one home and buy another are likely to increase, rather than decrease, housing equity.

So theory suggests that both housing wealth and imputed rent flows should be included in replacement rate calculations, while empirical evidence suggests that people simply do not behave as if they believed this. Survey after survey finds that people want and expect to stay in their current homes in retirement, adding to the suspicion most people do not think of their homes as just another financial asset.

Regardless of the emotional attachment most people seem to feel for their homes, it is possible that the baby boom will not have the luxury of treating home equity as untouchable. A large retiree generation, combined with a shrinking workforce and uncertainties about the retirement income that defined contribution plans will provide all mean that at least some baby boom retirees may have to tap their housing equity to maintain their living standards.

Reverse mortgages can be one way to accomplish this goal. Most people—90 percent of couples and 62 percent of singles—start retirement owning their own home (Venti and Wise 2001). Under a reverse mortgage, a home owner who is at least age 62 (both spouses, if married) can receive a monthly flow of income as long as the borrower continues to maintain the home as a principal residence. For a number of reasons, reverse mortgages have been slow to catch on with older home owners. These reasons include high loan origination costs, concerns about eroding the value of wealth available for bequests, and misperceptions about the risks associated with these loans (Abt Associates, Inc., 2000).

Despite these problems, rising home values seem to be contributing to an increase in reverse mortgage lending ("Reverse Mortgages Jump by 77 Percent Over Last Year" 2006). The most popular type of reverse mortgage in the United States is the FHA-insured Home Equity Conversion Mortgage (HECM), which accounts for 90 percent of all reverse mortgages. As of the end of 2005, a total of 195,418 HECM loans had been issued since the program's inception in 1989. The National Reverse Mortgage Lenders Association reports that 55,659 HECM loans were endorsed through the first nine months of fiscal year 2006, an 83 percent increase over the 30,404 loans endorsed during the same period in the prior fiscal year. While this market is thus very small, it has grown rapidly in recent years.

Observers expect growth in the reverse mortgage market to eliminate some of the current barriers to acceptance, including high origination costs and marketing misperceptions. At the same time, however, these barriers may prevent the market from growing. The market will have to resolve this dilemma before baby boomers find these mortgages a well-developed and attractive source of retirement income by the time they retire.

SUMMARY AND CONCLUSIONS

This paper has presented a variety of measures of retirement income replacement rates and income adequacy measures in the context of recent additions to the retirement income adequacy literature. Several major conclusions follow from this analysis.

Measuring Preparedness

There is no one "right" way to measure or predict the adequacy of retirement preparation. Some approaches are more rigorous in economic and statistical terms, while others are more intuitive. The best approach to retirement income adequacy seems to be an inclusive and multifaceted one that takes information from various sources and attempts to either derive a consensus or identify contradictions.

Replacement rates. Replacement rates are the simplest way to approach the issue of retirement preparedness. They are easy to explain and understand and, properly used, can encourage better retirement planning. Consider a prospective retiree who needs 70 percent of preretirement income to maintain her living standard in retirement. She can evaluate the effects of taking a part-time job, working longer at her current job, or perhaps moving to a smaller residence fairly easily with respect to this target rate.

But replacement rates have important limitations. Some of the very factors that can make replacement rates a good financial education tool limit their uses for research and policy analysis. Replacement rates provide only a snapshot of income adequacy and do not account for changes in circumstances over time.

They also depend critically on the pre- and postretirement income components that are to be included in the calculation. Some of the key measurement issues in calculating replacement rates concern retirement dates and the treatment of housing and medical expenses. Projected replacement rates are higher when people work longer and when the value of imputed rent and owner equity in owner-occupied housing are included in resources available for financing retirement. But many retirees accept Social Security retirement benefits as soon as they can. This means they have shorter work careers, during which they need to save more to finance a longer retirement. And most people do not act as if they consider their homes a retirement asset. Future medical expenses, in turn, can dramatically increase the replacement rates most people will need in retirement, and rule-of-thumb replacement rates do not take account of such expenses.

Savings and wealth adequacy. Studies of savings and wealth adequacy are designed to determine how well workers' savings patterns align with their likely lifetime spending needs. This approach is considered more comprehensive than other techniques (CBO 2003). It has advantages over replacement rates in that it takes account of households' changing financial circumstances and choices over time. It can also be used to assess the future effects of such current decisions as working longer or saving more. Various studies using this approach use different measures of wealth and savings and different methods, but their results are generally similar—some prospective retirees are well prepared for a comfortable retirement, but those who are not have a good distance left to go.

Intergenerational comparisons. Some studies are designed to determine how well the baby boom will fare in comparison with previous generations, such their parents'. In general, these studies find that most baby boomers can expect to do better on many measures of well-being than their parents, though income inequality is projected to increase. Intergenerational comparisons as a way of evaluating retirement preparedness have an intuitive reasonableness in that economic growth and

progress should mean that successive generations would do better than previous ones. However, such comparisons may be less interesting to baby boomers themselves. If their retirement incomes are not enough to maintain their own preretirement living standards, it may be scant comfort to remember that their parents lived on even less.

Vulnerable groups. On several measures of retirement income adequacy, entering retirement single is not a good idea. Single people (including those widowed, divorced, and never married) can expect adequate replacement rates compared with married couples. However, when the standard is changed to meeting their changing needs as they age, the median single person is almost certain to outlive his or her resources.

Educational attainment is also a marker for economic vulnerability. This is particularly true for those who have not completed high school. They can expect relatively high replacement rates in retirement, but this is a result of their lower incomes. They face a greater chance of outliving their resources than do other educational groups, but this probability is nowhere near as large as that for single retirees.

The role of housing in retirement income. For most people, their home is their largest financial asset. At the same time, however, most people see this asset as inviolate and illiquid and do not reduce their housing equity until well toward the end of their lives.

Baby boomers may not have this luxury. For many baby boomers, the value of housing equity will make the difference between a difficult retirement and one that generally maintains their preretirement living standards. However, there are few ways for older persons to turn their housing equity into retirement income. Reverse mortgages are a potential tool for accomplishing this goal, but they face many market barriers to widespread acceptance. As a result, the market for reverse mortgages is currently very small, though it has been growing in recent years.

Prospects for the Baby Boom

While several studies considered in this report represent methodological innovations over prior work, the basic picture is consistent across the studies considered, and also with prior research. The news is generally good at both the top and the very bottom of the income distribution. At least half of prospective retirees, including the baby boom, can expect an adequate, and in some cases, more than adequate, retirement income, but the other half may face difficulties. Poverty rates among the elderly are also expected to decline over time, but the near-poor will face a difficult retirement. Indeed, some may never retire; a recent employer survey suggests that as many as one in four boomers will not retire because they will not be able to do so (Munnell, Sass, and Aubrey 2006).

However, many of those whose situations put them below median measures of well-being may need to make important decisions in the near future. The better-off among this lower half may be able to maintain their preretirement living standards in retirement if they work a few years longer, save more, or both. Those at the lowest end of the income and wealth distributions may have fewer choices. Most of these studies also do not take account of the risks retirees face, including investment risks, longevity risks, and risks related to rising health care costs and needs.

Public Policy Implications

Based on the studies covered in this report, as well as on prior work on this topic, the baby boom's impending retirement potentially poses a number of problems for boomers themselves as well as for policymakers. Many boomers—one in four or more—may face grim retirements.

Boomers who may be better prepared for retirement should also ask themselves some questions. Retiring early is a luxury they could be paying for—on the installment plan—for the rest of their lives. Early retirement means reduced Social Security benefits as well as reduced pension income. In particular, those baby boomers with defined contribution pension plans can benefit substantially from another few years of contributions and the investment returns those contributions will accumulate over the rest of their lives. Some boomers may be able to return to work, either part- or full-time, if retirement turns out to be more expensive (or less interesting) than they had expected. But even boomers with strong credentials that make them desirable employees could find it harder to return to the workforce after a period away than to stay employed in the first place.

The nation as a whole also has a stake in these decisions. The future impact of the baby boom on Social Security and Medicare is already well understood. But there are more effects that may not be as well appreciated. A core of baby boomers that faces serious economic needs—those with the least education, for example—could mean a large new dependent population. At the other end of the income scale, various professions and sectors of the economy could be hard hit, losing both talent and institutional memory if boomers retire in the same patterns as preceding generations.

These patterns suggest that public policy choices may have an important role in salvaging the retirements of at least some groups. Several policy options could ease the baby boom's transition into retirement, both for boomers themselves and for the U.S. economy:

- Improved financial education, especially for older workers;

- An education campaign aimed at encouraging employers to hire and retain older workers as well as create attractive employment opportunities for them; and

- A commitment by governments at all levels to lead the way in encouraging older workers to work longer by promoting the availability of phased retirement, so-called "bridge" jobs, and part-time jobs.

Action on these fronts would not only solve some of the economic problems posed by the baby boom's impending retirement but would also improve the efficiency of both financial and labor markets.

Improved financial education. Individual perceptions and access to information will play a major role in the baby boom's future. For example, none of the baby boomers will be able to retire at age 65 with actuarially unreduced Social Security benefits, and none of those born after 1960 will be able to retire with full benefits until age 67. Yet survey after survey has shown that many people

who will be affected by the steady increase in the NRA—all those born after 1937—have no idea that the NRA is rising. Most people, of course, may not care that the NRA is rising because they expect to claim benefits much sooner. But since the actuarial reduction for early retirement is rising in tandem with the increases in the NRA, many early retirees may be committing themselves to a lower lifetime retirement income than they realize.

In contrast, misperceptions about Social Security seem to get entrenched in the public mind far more easily. For example, many people believe Social Security will not "be there" for them, even though eliminating the program—or even cutting out some groups—would face insuperable political obstacles. The Social Security Administration needs to launch an information campaign aimed at helping people, especially those near retirement, better understand their retirement options.

Private-sector financial education efforts do not seem to have been much better at reaching their intended targets. Many of these efforts are online, often as follow-ups to a workshop or other event (Shepherd 2006). However, even though more employers are offering financial education, utilization by employees remains low. More research needs to be done on the financial education employees and consumers need, on standards of effectiveness for both workplace and general consumer education, and on the best ways to provide such education.

Older workers in the workforce. Many older workers want to work past prevailing retirement ages; others will probably have to work. But this may not always be easy. While age discrimination is illegal, for many older workers it is a fact of life. Older workers may be denied training opportunities, for example, if employers believe they have a reasonable probability of retiring in the near future. However, older workers are generally more stable than younger workers, who may also leave after a few years and use the same training to benefit their next employer.

Older workers also have more difficulty finding jobs than younger workers when they are displaced. For example, as of December 2006, the average unemployed[40] worker age 20 to 34 had been out of work 14.5 weeks, but the average unemployed worker age 55 to 64 had been out of work 22.8 weeks (U.S. Bureau of Labor Statistics 2006).

The concept of workplace diversity is well established in the national consciousness. It may be time to place older workers under this umbrella.

Government leading the way. Agencies at all levels of government can lead the way in showing how both the needs and the talents of older workers can be met on the job. Many older workers who may not want to leave the workforce entirely may be interested in part-time work or "bridge" jobs that fill the gap between career work and retirement. But such jobs—part-time work in particular—are often poorly paid, with no benefits and few opportunities for advancement. The federal government has established many "flex-time" options for its employees; it could also devise new career paths to meet the needs of older workers.

The baby boom will retire—maybe sooner, maybe later, but it will retire. Some baby boomers will be unprepared for retirement and some will be underprepared, and some will simply be unwilling to

---

[40] Unemployed workers are defined as those actively seeking work.

retire at all. It is not too late for both government and the private sector to educate boomers about all their retirement options, nor is it too late for them to create a few more.

DATA SOURCES AND MODELS[41]

This section provides brief descriptions of the data sources and models used in studies cited in this paper.

Data Sources

Consumer Expenditure Survey (CEX). The Consumer Expenditure Survey program consists of two surveys collected for the Bureau of Labor Statistics by the Census Bureau—the quarterly Interview survey and the Diary survey—that provide information on the buying habits of American consumers, including data on their expenditures, income, and consumer unit (families and single consumers) characteristics.

Consumption and Activities Mail Survey (CAMS). In 2001, wave 1 of the CAMS was mailed to two random subsamples of the Health and Retirement Study (HRS) households that were interviewed in 2000. The questionnaire included questions about individual activities, household patterns of consumption, and individual use of prescription drugs. Wave 2 of the survey was mailed to the same households in October 2003. The structure of the two waves was almost the same to facilitate panel analysis.

Continuous Work History Sample (CWHS). Examining income over a multiyear period requires information on a taxpayer's income for all of the relevant years. The CWHS is a longitudinal data set embedded in the Internal Revenue Service's Statistics of Income sample. The CWHS is a random sample of tax filers and is generally representative of that population. It does not represent the population that does not file tax returns.

Employee Benefit Research Institute (EBRI)/Investment Company Institute (ICI) Participant-Directed Retirement Plan Data Collection Project. This program was initiated to measure the impact of sponsor and/or provider educational efforts on the investment behavior of participants in participant-directed defined contribution plans. The initial program objective has been expanded to include aspects of interest in defined contribution plans, such as participant behavior in asset allocations, contribution levels and participation, and the response to participant behavior by plan sponsors and service providers. The primary emphasis of the second phase of the program is the creation of a multisource longitudinal database that provides information on participant-level decisions with respect to participation, contributions, and asset allocation.

Health and Retirement Study (HRS). The HRS is a longitudinal study of health, retirement, and aging conducted by the Institute for Social Research of the University of Michigan. The study covers the physical and mental health, insurance coverage, financial status, family support systems, labor market status, and retirement planning of older Americans. In 1992, the first year it was fielded, the HRS surveyed only persons born in the years 1931–1941. It now surveys more than 22,000 persons over the age of 50 every two years (http://hrsonline.isr.umich.edu). A new cohort ages 51 to 55 is added every six years. The earliest boomers (born in 1948–1953) were added in 2004; mid-boomers (born in 1954–1959) are scheduled to be added in 2010.

---

[41] Except as indicated, these descriptions are based on the Web sites of the government agency or private organization responsible for each database.

IRS-Michigan Tax Panel. This is a 12-year panel of federal individual income tax returns spanning the years 1979–1990. Approximately 6,000 taxpayers' returns are present in all 12 years.

Master Earnings File. The SSA Master Earnings File maintains annual wage reports (derived from W-2 reports processed at SSA) for all workers in the United States. The file includes earnings from jobs covered under Social Security and noncovered jobs. Earnings over the maximum taxable amount are also included. The file reflects earnings from 1980 to 1991.

New Beneficiary Data System (NBDS). The NBDS, developed by SSA, contains extensive information on the changing circumstances of aged and disabled beneficiaries. Based initially on a national cross-sectional survey of new beneficiaries in 1982, the original database has been expanded with information from administrative records and a second round of interviews in 1991. Variables measured in the original New Beneficiary Survey (NBS) include demographic characteristics; employment, marital, and childbearing histories; household composition; health; income and assets; program knowledge; and information about the spouses of married respondents.

The 1991 New Beneficiary Follow-up updates marital status, household composition, and the economic profile and contains additional sections on family contacts, postretirement employment, effects of widowhood and divorce, major reasons for changes in economic status, a more extensive section on health, and information on household moves and reasons for moving. Disabled-worker beneficiaries were also asked about their efforts to return to work, experiences with rehabilitation services, and knowledge of SSA work incentive provisions.

Panel Survey of Income Dynamics (PSID). The PSID, begun in 1968, is a longitudinal study of a representative sample of U.S. individuals (men, women, and children) and the family units in which they reside. It emphasizes the dynamic aspects of economic and demographic behavior, but its content is broad, including sociological and psychological measures. As a consequence of low attrition rates and the success in following young adults as they form their own families, as well as successful recontact efforts of those declining an interview in prior years, the sample size has grown from 4,800 families in 1968 to more than 7,000 families in 2001. At the conclusion of 2003 data collection, the PSID will have collected information about more than 65,000 individuals spanning as much as 36 years of their lives. It is a project of the Institute for Social Research of the University of Michigan.

Models

EBRI/Education and Research Fund (ERF) Retirement Security Projection Model®. This model produces retirement income projections using a wide range of data.[42] It projects defined benefit pension plan accruals; balances in defined contribution plans, cash balance plans, and individual retirement accounts; Social Security income; and net housing equity for persons born from 1936 to 1965. At retirement age, the model simulates 1,000 alternative life paths for each family unit to assess whether retirement accumulations will be sufficient to cover both basic (deterministic) and health-related (stochastic) expenses for each simulated life path.

EBRI/ICI 401(k) Accumulation Projection Model.[43] This model projects replacement rates from 401(k) plan accumulations at retirement, whether held in employer accounts or in rollover individual retirement accounts. The projections rely primarily on detailed administrative data on a very large sample of 401(k) participants. A standard methodology to build such a model is to use current typical behaviors across different age groups to predict how individuals are likely to behave over time as they age. The model analyzes the behavior of 2.5 million 401(k) plan participants drawn from the EBRI/ICI Participant-Directed Retirement Plan Data Collection Project.

MINT and DYNASIM.[44] MINT and DYNASIM are microsimulation models designed to evaluate the characteristics and distribution of income of future retirees. Both models start with the 1990–1993 Survey of Income and Program Participation (SIPP) panels and make annual projections into the future: MINT to 2032 and DYNASIM to 2050.[45] Both models project marriage, divorce, death, disability, earnings, pensions, home equity, financial assets, Social Security, SSI, and coresident income. MINT includes only the 1926 to 1965 birth cohorts, while DYNASIM includes all cohorts, including new births and immigrants.

MINT and DYNASIM incorporate historic earnings (1951 to the SIPP interview date) from different sources. MINT's historic earnings are based on the SIPP matched to SSA records on earnings, benefits, and mortality. DYNASIM's historic earnings are based on a statistical match of earnings histories in the 1968–1993 Panel Study of Income Dynamics (PSID) to the 1972 March Current Population Survey (CPS) and SSA Summary Earnings Records. MINT and DYNASIM also use different methods to generate data on future earnings, marriage, divorce, fertility, labor force participation, disability, and death.

Many of the other modules in MINT and DYNASIM are very similar. For example, pensions, Social Security benefits, coresidence income, financial wealth, and housing wealth are all projected using similar base data and methodologies.

---

[42] This explanation relies on VanDerhei (2006).

[43] This explanation relies on Holden and VanDerhei (2002).

[44] This explanation is based on Butrica and Smith (2007).

[45] MINT was designed to project the 1931–1960 birth cohorts to 2020. MINT3 extends the original design to include individuals born between 1926 and 1965 and project data to 2032 (the year the 1965 cohort reaches age 67). MINT4 is based on the 1996 SIPP panel, includes individuals born between 1926 and 1972, and projects data to 2039.

REFERENCES

Abt Associates, Inc. *Evaluation Report of FHA's Home Equity Conversion Mortgage Insurance Demonstration.* Prepared for U.S. Department of Housing and Urban Development, March 31, 2000. www.huduser.org/Publications/pdf/hecmrpt.pdf.

Aon/Georgia State University. *Retirement Income Needs in a Defined Contribution World.* Chicago: Aon Corporation, 2004.

Brady, Peter. "Optimal Savings: Would We Know It If We Saw It?" Working Paper, March 2007. Original version prepared for the National Tax Association Annual Conference, November 16–18, 2006, in Boston, Massachusetts.

Butrica, Barbara, Howard Iams, and Karen E. Smith. "It's All Relative: Understanding the Retirement Prospects of Baby Boomers." Washington, D.C.: Urban Institute, 2003. www.urban.org/url.cfm?ID=411127.

_____. "The Changing Impact of Social Security on Retirement Income in the United States." *Social Security Bulletin* 65 (3) (2003/2004): 1–13.

Butrica, Barbara, and Karen E. Smith. "MINT vs. DYNASIMV2." Unpublished, January 2007.

Butrica, Barbara, and Cori E. Uccello. "How Will Boomers Fare at Retirement?" #2004-05. Washington, D.C.: AARP Public Policy Institute, May 2004.

Cao, Honggao, Daniel H. Hill, F. Thomas Juster, and Michael Perry. "Enhancing the Quality of Data on Income and Wealth." *University of Michigan Retirement Research Center Working Paper 2005-101*, 2005.

Clingman, Michael, and Orlo Nichols. "Scaled Factors for Hypothetical Earnings Examples under the 2006 Trustees Report Assumptions." *Actuarial Note Number 2006.3.* Washington, D.C.: Social Security Office of the Chief Actuary, September 2006.

Congress of the United States. Congressional Budget Office (CBO). *Baby Boomers' Retirement Prospects: An Overview.* Washington, D.C.: U.S. Government Printing Office, 2003. www.cbo.gov/ftpdocs/48xx/doc4863/11-26-BabyBoomers.pdf.

Engen, Eric M., William G. Gale, and Cori E. Uccello. "Lifetime Earnings, Social Security Benefits, and the Adequacy of Wealth Accumulation." *Social Security Bulletin* 66 (1) (2005): 38–57.

Haveman, Robert, Karen Holden, Barbara Wolfe, and Andrei Romanov. "The Sufficiency of Retirement Savings: Comparing Cohorts at the Time of Retirement." *Pension Research Council Working Paper No. WP2006-14,* September 2006.

Holden, Sarah, and Jack VanDerhei. "Appendix: EBRI/ICI 401(k) Accumulation Model." *Perspective* 8 (November 2002): 1–12. www.ici.org/perspective/per08-03_appendix.pdf.

_____. "Can 401(k) Accumulations Generate Significant Income for Future Retirees?" *EBRI Issue Brief 251,* November 2002.

Hurd, Michael, and Susann Rohwedder. "Alternative Measures of Replacement Rates." Prepared for the 8th Annual Joint Conference of the Retirement Research Consortium: Pathways to a Secure Retirement, August 10–11, 2006, Washington, D.C.

Kotlikoff, Laurence J. "Is Conventional Financial Planning Good for Your Financial Health?" January 2006. http://people.bu.edu/kotlikof/Is%20Conventional%20Financial%20Planning%20Good%20for%20Your%20Financial%20Health.pdf.

Love, David A., and Paul A. Smith. "Measuring Dissaving out of Retirement Wealth." March 2007. http:///ssrn.com/abstract=968431.

Manchester, Joyce, David Weaver, and Kevin Whitman. "Baby Boomers and Their Parents: Economic Well-being and Health Status." *Pension Research Council Working Paper No. WP2006-17,* September 2006.

Martin, Patricia P. "Comparing Replacement Rates under Private and Federal Retirement Systems." *Social Security Bulletin* 65 (1) (2003/2004): 17–25.

Meyer, Madonna Harrington, Douglas A. Wolf, and Christine L. Himes. "Linking Benefits to Marital Status: Diminishing Access to Social Security Spouse and Widow Benefits in the U.S." *Feminist Economics*, forthcoming.

Mitchell, Olivia S., and John W.R. Phillips. "Social Security Replacement Rates for Alternative Earnings Benchmarks." *University of Michigan Retirement Research Center Working Paper No. 116,* May 2006.

Munnell, Alicia H., and Mauricio Soto. "What Replacement Rates Do Households Actually Experience in Retirement?" *Center for Retirement Research Working Paper 2005-10*, August 2005.

Munnell, Alicia H., Steven A. Sass, and Jean-Pierre Aubry. "Employer Survey: 1 of 4 Boomers Won't Retire Because They Can't." *An Issue in Brief.* Center for Retirement Research at Boston College, December 2006.

Patton, Susannah. "Beating the Boomer Brain Drain Blues." *CIO Magazine,* January 25, 2006. www.cio.com/archive/011506/boomer.html.

"Reverse Mortgages Jump by 77 Percent over Last Year." October 29, 2006. www.seniorjournal.com/NEWS/ReverseMortgage/6-10-29-ReverseMortgagesJump.htm.

Scholz, John Karl, Ananth Seshadri, and Surachai Khitatrakun. "Are Americans Saving Optimally for Retirement?" *Journal of Political Economy* 114 (4) (2006): 607–42. www.ssc.wisc.edu/~scholz/Research/Optimality.pdf.

Shepherd, Leah Carlson. "Web-smart Savers—Online Tools Enhance Financial Education but Still Unused." *Employee Benefit News,* December 2006. www.benefitnews.com/detail.cfm?id=9823&terms=|savers||web||smart|.

U.S. Bureau of Labor Statistics. *National Compensation Survey.* Washington, D.C.: U.S. Government Printing Office, 2000.

_____. "Labor Force Statistics from the Current Population Survey: Annual Averages—Household Data." 2006. www.bls.gov/cps/home.htm.

U.S. Centers for Disease Control and Prevention. National Center for Health Statistics. "Total Fertility Rates and Birth Rates, by Age of Mother and Race: United States, 1940–99." 2000. www.cdc.gov/nchs/data/statab/t991x07.pdf.

U.S. Department of Labor (DOL). "Coverage Status of Workers under Employer Provided Pension Plans: Findings from the Contingent Work Supplement to the February, 1999 Current Population Survey." 1999. www.dol.gov/ebsa/publications/99pensionreport.html.

U.S. Government Accountability Office. *Retirement of Baby Boomers Is Unlikely to Precipitate Dramatic Decline in Market Returns, but Broader Risks Threaten Retirement Security.* Washington, D.C.: U.S. Government Printing Office, 2006. www.gao.gov/new.items/d06718.pdf.

U.S. Social Security Administration (SSA). *FY 2004 Performance and Accountability Report.* Washington, D.C.: U.S. Social Security Administration, 2004.

_____. *Annual Statistical Supplement, 2005.* Washington, D.C.: U.S. Social Security Administration, 2005.

_____. *Income of the Population 55 or Older, 2004.* Washington, D.C.: U.S. Social Security Administration, 2006a.

_____. *Income of the Aged Chartbook, 2004.* Washington, D.C.: U.S. Social Security Administration, 2006b.

_____. Office of the Chief Actuary. "Single-Year Tables Consistent with 2007 OASDI Trustees' Report." Updated April 23, 2007. www.ssa.gov/OACT/TR/TR07/lrIndex.html.

VanDerhei, Jack. "Measuring Retirement Income Adequacy: Calculating Realistic Retirement Income Replacement Rates." *EBRI Issue Brief No. 297,* September 2006.

Venti, Steven F., and David A. Wise. "But They Don't Want to Reduce Housing Equity." In *Issues in the Economics of Aging,* ed. David A. Wise. Chicago: University of Chicago Press, 1990.

_____. "Aging and Housing Equity: Another Look." *NBER Working Paper No. 8608,* 2001.

TABLES

Table 1. Alternative Approaches to Measuring Social Security Replacement Rates

Source	Replacement Rate Definition	Group Considered	Replacement Rate (%)	Data Source or Model
Butrica, Iams, and Smith (2003, 2003/2004)	SS retirement benefits/shared lifetime earnings, median 10% by replacement rates at age 67	1946–1955 birth cohort 1956–1965 birth cohort	32.0	MINT
			31.0	
Mitchell and Phillips (2006)	SS retirement benefits (PIA)/AIME	1936 birth cohort, median 10% by earnings, at normal retirement age	54.6	HRS
	SS retirement benefits (PIA)/own lifetime average earnings		55.6	
	SS retirement benefits (PIA)/own final five-year average earnings		40.8	
	SS retirement benefits (PIA)/national average earnings 1957–2000		35.2	
	SS retirement benefits/national average earnings 2000		32.5	
Munnell and Soto (2005)	Median SS retirement benefits (PIA)/AIME	Persons retiring in 2002	40.6	HRS (1992-2004)
Social Security Administration (SSA) (2004)	Median SS retirement benefits (PIA)/AIME	New SS beneficiaries (2002)	42.1	1% sample CWHS and Master Earnings File
SSA (2007)	SS retirement benefits (PIA)/AIME	Medium scaled worker	41.5	SSA Office of the Chief Actuary

Sources: See table. See text for detail on data sources and results. Abbreviations used for data sources and models are defined in the text and in "Data Sources and Models."

Table 2. Alternative Measures of Retirement Income Replacement Rates from All Sources

Source	Replacement Rate	Birth Cohort				Data Source or Model
		1926–1935	1936–1945	1946–1954	1955–1965	
Butrica, Iams, and Smith (2003, 2003/2004)	Income/shared lifetime earnings, at ages 22–62 for median 10% by replacement rates at age 67	93	82	80	81	MINT
Butrica and Uccello (2004)	Median ratio of per capita family income at 67 to average per capita shared earnings at ages 50–54	87	86	88	80	DYNASIM
Holden and VanDerhei (2002)	Annuitized value of 401(k) balances/final five-year average salary (median rate by final-five earnings quartile), 1955–1959 birth cohort, retiring at age 65				1st - 58 2nd - 58 3rd - 65 4th - 75	EBRI/ICI Data Project
Martin (2003/2004)	Benefits of steady workers retiring in 2002 at age 65 with 35 years of earnings/final salary (private) by SS hypothetical earnings category		Low: 147 Average: 133 High: 124 Maximum: 110			Author's calculations
	Benefits of steady workers retiring in 2002 under FERS at age 65 with 35 years of earnings/final salary (federal) by SS hypothetical earnings category		Low: 146 Average: 132 High: 122 Maximum: 108			

Sources: See table. See text for detail on data sources and results. Abbreviations used for data sources and models are defined in the text and in "Data Sources and Models."

Table 3. Measures of Wealth Adequacy at Retirement

	Engen, Gale, and Uccello (2005)	Scholz, Seshadri, and Khitatradun (2006)		
Adequacy Measure	Current wealth-to-lifetime-earnings ratios to date	Net worth/consumption path from start of work career to death		
Group(s) Considered	Couples with husband ages 51 to 61 in 1992 and working full-time	Persons ages 51 to 61 in 1992		
Distribution of Adequacy Measure among Households	% of households with wealth-to-lifetime-earnings ratios at or above simulated median, by lifetime earnings quartile	Median optimal wealth targets, households falling short of optimal wealth over their lifetime and median shortfall for those with a shortfall, by earnings decile		
		Decile	Median Optimal Wealth Target ($)	Households with Shortfall (%)	Median Shortfall ($)
		1	2,054	33.5	2,875
		2	13,485	32.3	3,899
		3	28,730	26.2	6,000
		4	44,634	24.0	4,957
		5	55,980	18.9	6,248
		6	80,731	14.1	8,608
	1st - 53	7	84,854	12.0	10,248
	2nd - 65	8	103,197	8.8	5,752
	3rd - 71	9	138,176	6.4	4,839
	4th - 72	10	246,941	7.7	28,319
Data Source or Model	HRS (1992) PSID (1980–1992) IRS-Michigan Tax Panel	HRS (1992)		

Sources: See table. See text for detail on data sources and results. Abbreviations used for data sources and models are defined in the text and in "Data Sources and Models."

Table 4. Intergenerational Income and Wealth Comparisons

	Butrica, Iams, and Smith (2003, 2003/2004)				Butrica and Uccello (2004)									Manchester, Weaver, and Whitman (2006)	
Income or Wealth Measure	Median per capita family income at age 67				Median household income at age 67				Median household wealth of individuals at age 67					Per capita income/economywide average wage	
Groups Considered	(1) 1926–1935 birth cohort (2) 1936–1945 birth cohort (3) 1946–1955 birth cohort (4) 1956–1965 birth cohort													"Parents": 1926–1936 birth cohort at ages 62–72 (1998); and "Baby Boomers": 1950–1960 birth cohort at ages 62–72 (2022)	
Distribution of Measure among Households	Median per capita family income at age 67 in thousands of 2003 dollars, by cohort and income quintile				Median household income at age 67 in thousands of 2003 dollars, by cohort and income quintile				Median household wealth of individuals at age 67 in thousands of 2003 dollars, by cohort and wealth quintile					Income/average wages by generation and percentile (in percents)	
		(1)	(2)	(3)	(4)		(1)	(2)	(3)	(4)		(1)	(2)	(3)	(4)	Parents	Boomers
	1st	9	11	12	12	1st	12	14	16	18	1st	204	251	272	310	10th - 23.2	10th - 22.8
	2nd	16	19	22	23	2nd	22	28	31	33	2nd	330	362	401	448	25th - 40.6	25th - 41.5
	3rd	23	28	33	34	3rd	36	44	50	50	3rd	460	506	577	601	50th - 69.5	50th - 74.7
	4th	33	40	49	52	4th	54	66	74	76	4th	589	695	801	821	75th - 115.2	75th - 140.2
	5th	54	69	86	97	5th	86	109	125	128	5th	755	966	1246	1264	90th - 193.6	90th - 265.2
Data Source or Model	MINT				DYNASIM									MINT	

Sources: See table. See text for detail on data sources and results. Abbreviations used for data sources and models are defined in the text and in "Data Sources and Models."

Table 5. Intergenerational Poverty Comparisons

	Butrica, Iams, and Smith (2003, 2003/2004)	Butrica and Uccello (2004)		Haveman et al. (2006)		Manchester, Weaver, and Whitman (2006)	
Poverty Measure	% in poverty	(a) % in poverty (b) % with incomes <2X poverty line		(a) ANW/ poverty line (b) ANW/2X poverty line		Income/poverty level income	
Groups Considered	(1) 1926–1935 birth cohort (2) 1936–1945 birth cohort (3) 1946–1955 birth cohort (4) 1956–1965 birth cohort			NBS: persons retiring in the early 1980s HRS: persons retiring in the mid-1990s		"Parents": 1926–1936 birth cohort at ages 62–72 (1998); and "Baby Boomers": 1950–1960 birth cohort at ages 62–72 (2022)	
Distribution of Measure Among Households	Poverty rates at age 67 by birth cohort, in %	Poverty rates at age 67 by birth cohort and poverty standard, in %		Ratio of annuitized wealth to poverty income, by poverty measure and cohort		Income/poverty level by generation and percentile (in %)	
						Parents	Boomers
		Poverty	<2X poverty			10th - 1.3	10th - 1.6
	(1) 8	(1) 8	(1) 32			25th - 2.2	25th - 2.9
	(2) 6	(2) 5	(2) 23	Cohort	ANW/poverty	ANW/2X	50th - 3.7	50th - 5.3
	(3) 4	(3) 4	(3) 18	NBS	3.5	1.8	75th - 6.1	75th - 9.5
	(4) 4	(4) 2	(4) 15	HRS	5.4	2.7	90th - 10.1	90th - 18.0
Data Source or Model	MINT	DYNASIM		NBS (1982, 1991) HRS (1992–1998)		MINT	

Sources: See table. See text for detail on data sources and results. Abbreviations used for data sources and models are defined in the text and in "Data Sources and Models."

Table 6. Indicators of Well-being by Marital Status and Birth Cohort

	Butrica, Iams, and Smith (2003, 2003/2004)			Butrica and Uccello (2004)			Haveman et al. (2006)		
Income or Wealth Measure	Median ratio of per capita family income at 67 to average shared earnings at ages 22–62			Median ratio of per capita shared income at age 67 to average per capita shared earnings at ages 50–54			(1) ANW/ poverty standard (2) ANW/2X poverty standard		
Groups Considered	(1) 1946–1955 birth cohort (2) 1956–1965 birth cohort						Persons ages 62–72 who received first SS benefit in mid-1990s		
Distribution of Measure Among Households	Median ratio of per capita family income at 67 to average shared earnings at ages 22–62, by cohort and marital status,[a] in %			Median ratio of per capita shared income at age 67 to average per capita shared earnings at ages 50–54, by cohort and marital status,[a] in %			Mean ANW/poverty standard, by standard, marital status, and survey		
		(1)	(2)		(1)	(2)		Poverty	2XPoverty
	M	82	81	M	86	77	Married	5.89	2.95
	W	80	80	W	112	101	Single	4.35	2.18
	D	90	92	D	81	73			
	N	75	77	N	92	89			
Data Source or Model	MINT			DYNASIM			HRS (1992–1998)		

(continued)

[a] M = married, W = widowed, D = divorced, N = never married

40

	Hurd and Rohwedder (2006)		Munnell and Soto (2005)			
Income or Wealth Measure	Wealth at retirement minus projected lifetime consumption based on initial postretirement consumption		Replacement rates calculated in two ways: (1) Annuitized income from all sources/(AIME + earnings above SS cap + annuitized value of all assets) (2) Annuitized income from all sources/(CPI indexed top-five earnings + annuitized value of all assets)			
Groups Considered	Persons ages 51 and older in 2004		HRS participants in the first year they receive Social Security benefits			
Distribution of Measure among Households	Mean and median excess wealth over consumption needs in retirement, by marital status ($ in thousands)		Median replacement rates by type of replacement rate, marital status, and pension status, in %			
	Married	Single	(1) Couples		(1) Singles	
	Mean - $434.8	Mean - $63.5	Pension	79	Pension	89
	Median - $244.3	Median - $5.7	No pension	62	No pension	63
			(2) Couples		(2) Singles	
			Pension	65	Pension	72
			No pension	52	No pension	53
Data Source or Model	HRS (1992–2004) CAMS waves 1 (2001) and 2 (2003) CEX (2001)		HRS: 1992–2004			

Sources: See table. See text for detail on data sources and results. Abbreviations used for data sources and models are defined in the text and in "Data Sources and Models."

Table 7. Retirement Income and Savings Adequacy by Education Level and Birth Cohort

	Butrica, Iams, and Smith (2003)			Butrica and Uccello (2004)		
Income or Wealth Measure	Median ratio of per capita family income at 67 to average shared earnings at ages 22–62			Median ratio of per capita shared income at age 67 to average per capita shared earnings for ages 50–54		
Groups Considered	(1) 1946–1955 birth cohort (2) 1956–1965 birth cohort					
Distribution of Measure among Households	Median ratio of per capita family income at 67 to average shared earnings at ages 22–62, by cohort and education level, in %			Median ratio of per capita family income at 67 to average shared earnings at ages 50–54, by cohort and education level, in %		
	Education level	(1)	(2)	Education level	(1)	(2)
	< High school	93	97	< High school	99	83
	High school graduate	77	78	High school graduate	84	78
	College graduate	85	84	College graduate	91	83
Data Source or Model	MINT			DYNASIM		

Table 7, continued

	Hurd and Rohwedder (2006)			Haveman et al. (2006)		
Income or Wealth Measure	Wealth at retirement minus projected lifetime consumption based on initial postretirement consumption			(1) ANW/ poverty standard (2) ANW/2X poverty standard		
Groups Considered	Persons ages 51 and older in 2004			HRS: persons ages 62–72 who received first SS benefit in mid-1990s		
Distribution of Measure among Households	Mean and median excess wealth over consumption needs in retirement, by education level ($ in thousands)			Mean ANW/poverty standard, by standard and education level		
		Mean	Median		ANW/poverty	ANW/2X poverty
	< High school	198.3	77.4	< High school	3.16	1.58
	High school	352.7	240.7	High school	4.96	2.48
	Some college	444.6	289.5	Some college	5.96	2.98
	College +	857.3	519.8	College	8.12	4.06
Data Source or Model	HRS (1992–2004) CAMS waves 1 (2001) and 2 (2003) CEX (2001)			HRS (1992–1998)		

Sources: See table. See text for detail on data sources and results. Abbreviations used for data sources and models are defined in the text and in "Data Sources and Models."

Public Policy Institute