

# A NEW NATIONAL RETIREMENT RISK INDEX

BY ALICIA H. MUNNELL, ANTHONY WEBB, AND LUKE DELORME\*

---

## Introduction

Americans weaned on post-war affluence have come to expect an extended period of leisure at the end of their work life. And, indeed, the majority of today's retirees are able to afford a decent retirement. However, this group is living in a "golden age" that will fade as Baby Boomers and Generation Xers reach traditional retirement ages in the coming decades. This gloomy prediction reflects the trend towards longer retirements and likely declines in retirement incomes relative to pre-retirement earnings — known as replacement rates.

Because many Americans appear unaware of these disquieting trends, the Center for Retirement Research at Boston College has developed the National Retirement Risk Index.<sup>1</sup> The Index measures the share of working-age households who are at risk of being unable to maintain their pre-retirement standard of living in retirement.<sup>2</sup>

The Index shows that, even if people retire at age 65 and households annuitize all their wealth including the receipts from reverse mortgages on their homes, 43 percent will be at risk. But the situation is not hopeless — if people choose to work longer — even just two years — and save 3 percent more, they can substantially improve the outlook for their retirement security.

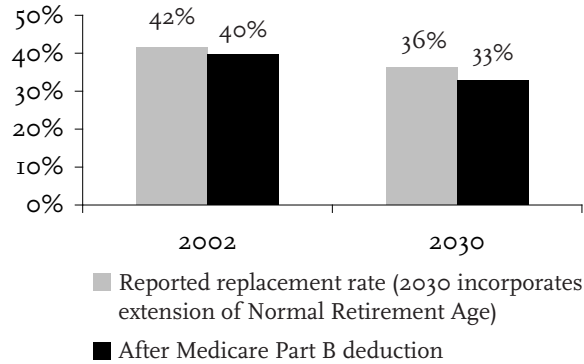
## Not Your Parents' Retirement

Baby Boomers and Generation Xers will retire in a substantially different environment than their parents did. The length of retirement is increasing as the average retirement age hovers at 63 for men and 62 for women and life expectancy continues to rise. At the same time, replacement rates are falling for a number of reasons. First, at any given retirement age, Social Security benefits will replace a smaller fraction of pre-retirement earnings as the Normal Retirement Age rises from 65 to 67 (see Figure 1).<sup>3</sup> Second, while the share of the workforce covered by a pension has not changed over the last quarter of a century, the type of coverage has shifted from defined benefit plans, where workers receive a life annuity based on years of service and final salary, to 401(k) plans, where workers themselves are responsible for their own saving. In theory 401(k) plans could provide adequate retirement income, but individuals make mistakes at every step along the way and the median balance for household heads approaching retirement is only \$60,000.<sup>4</sup> Third, most of the working-age population saves virtually nothing outside of their employer-sponsored pension plan. And fourth, asset

---

\* Alicia H. Munnell is the Director of the Center for Retirement Research (CRR) and the Peter F. Drucker Professor of Management Sciences at Boston College's Carroll School of Management. Anthony Webb is a Research Economist at the CRR. Luke Delorme is a Research Associate at the CRR. The Center gratefully acknowledges Nationwide Mutual Insurance Company for its exclusive support of the National Retirement Risk Index (NRRRI). The Center is also greatly indebted to the NRRRI Advisory Board — consisting of Jeffrey Brown, Gary Burtless, and Robert Clark — for extremely valuable suggestions and advice throughout the project. Of course, the findings and conclusions expressed in this report are solely those of the Center for Retirement Research at Boston College and do not necessarily reflect the views of either Nationwide Mutual Insurance Company or any of the members of the Advisory Board.

FIGURE I. SOCIAL SECURITY REPLACEMENT RATES FOR AVERAGE EARNER RETIRING AT AGE 65, 2002<sup>a</sup> AND 2030



Source: Authors' updates based on Munnell (2003).  
Note: Medicare Part B premiums are deducted directly from Social Security checks.

<sup>a</sup> This is a ten year average from 1992-2002.

returns in general, and bond yields in particular, have declined over the past two decades so a given accumulation of retirement assets will yield less income. In addition to a rising period of retirement and falling replacement rates, out-of-pocket medical expenses are projected to consume an ever greater proportion of retirement income.

Because many Americans are not aware of the challenges facing future retirees, the Center has established the National Retirement Risk Index. The Index is designed to raise awareness and to help encourage individuals, employers, and policymakers to make changes that will strengthen future retirement security.

## The Nuts and Bolts of the National Retirement Risk Index

The National Retirement Risk Index first projects a replacement rate — retirement income as a share of pre-retirement income — for a nationally representative sample of U.S. households. This replacement rate is then compared to a target rate, which would allow a household to maintain its pre-retirement standard of living in retirement. The Index methodology is summarized below.

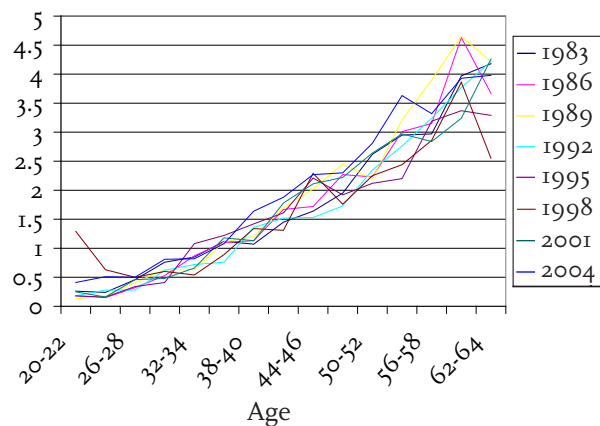
## Projecting Income in Retirement

The exercise starts with a nationally representative sample of about 4,500 households from the Federal Reserve's 2004 *Survey of Consumer Finances* (SCF).<sup>5</sup> The Index requires projecting where these households will be at age 65, a conservative assumption given that the average retirement age today is lower.<sup>6</sup> But, in the future, households will have to retire later if they are to have an adequate income.

Retirement income is defined broadly to include all of the usual suspects plus housing.<sup>7</sup> Each income component is projected separately, and then added together to produce a total for each household at age 65.<sup>8</sup> For financial assets in 401(k) plans and other accounts, the projections are based on wealth-to-income patterns by age group from the 1983-2004 SCF surveys; these patterns turn out to be strikingly similar over the whole period (see Figure 2).

For defined benefit pension income, the projections are based on the amounts reported in the SCF. For Social Security, benefits are calculated directly based on earnings histories for each member of the household. For housing, the projections rely on SCF data for two distinct sources of income: the rental value that homeowners receive from living in their home rent free and the amount of equity they could borrow from their housing wealth through a reverse mortgage.<sup>9</sup>

FIGURE 2. MEDIAN RATIO OF WEALTH-TO-INCOME FOR THE SURVEYS OF CONSUMER FINANCES, 1983-2004



Source: Authors' calculations from the various *Surveys of Consumer Finances*.

## Estimating Pre-Retirement Income

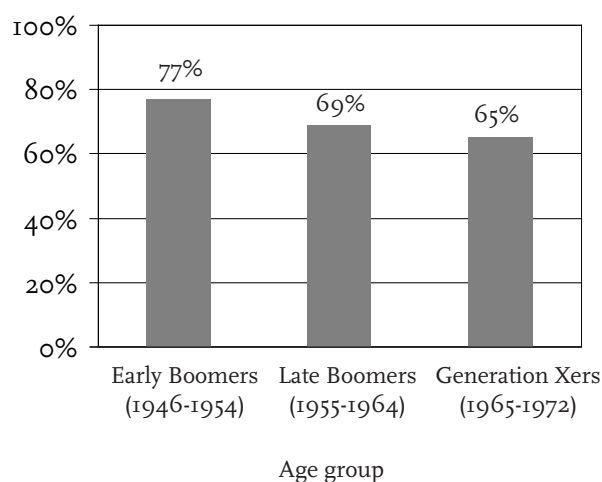
The items that comprise pre-retirement income include earnings, the return on 401(k) plans and other financial assets, and imputed rent from housing.<sup>10</sup> In essence, with regard to wealth, income in retirement equals the annuitized value of all financial and housing assets; income before retirement is simply the return on those same assets.

Earnings histories are indexed to reflect the growth in wages and averaged over the life of the household. Average annual income from wealth is calculated by applying a real return of 4.6 percent to pre-retirement assets. This number, combined with average wage-indexed lifetime earnings, then serves as the denominator for each household's replacement rate.

## Replacement Rates for Selected Households

With projections of pre- and post-retirement income, it is possible to calculate the projected replacement rate for each household when the head reaches 65. Figure 3 shows the median for three age groups — the Early Boomers (those born between 1946 and 1954), the Late Boomers (those born between 1955 and 1964), and Generation Xers (those born between 1965 and 1972). The median replacement rate declines over time from 77 percent for the Early Boomers who are just about to retire, to 69 percent for the Late Boomers, and 65 percent for Generation Xers.

FIGURE 3. MEDIAN REPLACEMENT RATES AT AGE 65 BY AGE GROUP



Source: Authors' calculations.

This decline reflects the changing retirement landscape described above — declining Social Security replacement rates, low 401(k) balances, and longer life expectancies.

## Replacement Rate Targets

To determine the share of the population that will be at risk requires comparing projected replacement rates with a benchmark rate. A commonly used benchmark is the replacement rate needed to allow households to maintain their pre-retirement standard of living in retirement. People clearly need less than their full pre-retirement income to maintain this standard once they stop working since they pay less in taxes, no longer need to save for retirement, and often have paid off their mortgage. Thus, a greater share of their income is available for spending.<sup>11</sup>

As shown in Table 1, different targets were used to cover different income groups and household types.

TABLE 1. TARGET REPLACEMENT RATES BY INCOME GROUP AND HOUSEHOLD TYPE

Household type	All	Income group		
		Bottom third	Middle third	Top third
All	73 %	81 %	72 %	67 %
Couples	73	81	72	67
One earner	76	85	75	68
Two earner	72	77	71	67
Singles	72	81	71	65
Men	70	76	70	65
Women	73	82	71	65

Source: Authors' calculations.

## The National Retirement Risk Index

The final step in creating the Index is to simply compare each household's projected replacement rate with the appropriate target. Households whose projected replacement rates fall more than 10 percent below the target are deemed to be at risk of having insufficient income to maintain their pre-retirement standard of living. For example, a household with a 70 percent target rate would be classified as "at risk" if its projected replacement rate fell below 63 percent of its pre-retirement income. The percentage of house-

TABLE 2. PERCENT OF HOUSEHOLDS “AT RISK” AT AGE 65 BY HOUSEHOLD TYPE

Household type	All	Early Boomers 1946-1954	Late Boomers 1955-1964	Generation Xers 1965-1972
All	43%	35%	44%	49%
Couples	43	36	43	49
One earner	23	22	25	22
Two earner	45	38	45	53
Singles	42	35	47	48
Men	39	30	46	41
Women	44	37	47	52

Source: Authors' calculations.

holds at risk for the three age groups and various household types is presented in Table 2.

The most important result is that a large percentage of households — 43 percent — is at risk of having inadequate retirement income. For the Early Boomers, the “at risk” share equals 35 percent for all households. That is, 35 percent of households in this age group are likely to have retirement income that falls more than 10 percent below the target needed to maintain their pre-retirement living standard. And an increasing proportion of households are at risk over time due to the changing retirement landscape. Specifically, the share of households at risk rises to 44 percent for the Late Boomers and to 49 percent for members of Generation X.

The pattern by household type is also predictable. One-earner couples, who receive more generous Social Security benefits, are less likely than two-earner couples to be at risk. Single women are more likely to be at risk than single men because a greater proportion of single women are in the bottom third of the income distribution, where the probability of being “at risk” is the highest.

Table 3 presents “at risk” results by income group.

TABLE 3. PERCENT OF HOUSEHOLDS “AT RISK” BY INCOME GROUP

Income group	Early Boomers 1946-1954	Late Boomers 1955-1964	Generation Xers 1965-1972
All	35%	44%	49%
Top third	33	35	42
Middle third	28	44	46
Bottom third	45	54	60

Source: Authors' calculations.

As anticipated, the households most at risk are those in the bottom third of the income distribution. These households rely almost exclusively on Social Security benefits, which are scheduled to decline sharply relative to pre-retirement income.

Table 4 shows “at risk” results by pension coverage. Having a pension of any sort is the key to a secure retirement. But even those with a pension will become increasingly at risk as retirees rely increasingly on modest 401(k) balances.

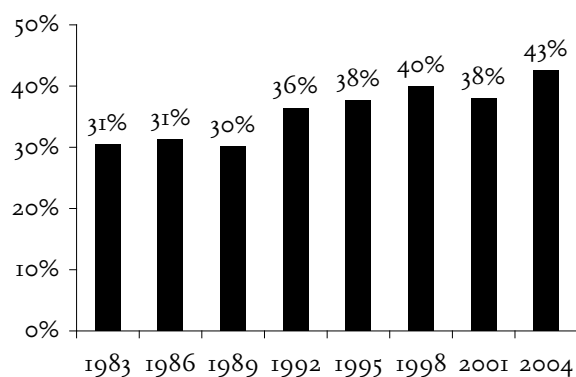
TABLE 4. PERCENT OF HOUSEHOLDS “AT RISK” BY PENSION COVERAGE

Pension coverage	Early Boomers 1946-1954	Late Boomers 1955-1964	Generation Xers 1965-1972
All	35%	44%	49%
Pension	28	37	40
DB plan	15	20	30
DC plan	49	52	48
Both	12	21	25
No pension	50	60	65

Source: Authors' calculations.

Finally, Figure 4 presents movements in the Index over the 1983 to 2004 period. The clear message is that retirement risk has generally risen steadily over time.<sup>12</sup> The most important reasons for this trend relate to changes in Social Security replacement rates. First, the percentage of two-earner couples has risen significantly. Two-earner couples tend to have lower replacement rates than one-earner couples as the second earner adds to the household's pre-retirement income but often does not increase the size of the Social Security benefit. Second, the gradual increase in Social Security's Normal Retirement Age began to affect expected benefits during this period. Other factors, such as increasing life expectancy and lower interest rates, have also contributed to the rise in retirement risk over the past two decades.

FIGURE 4. THE NATIONAL RETIREMENT RISK INDEX, 1983-2004



Source: Authors' calculations.

## How Sensitive Are the Results to the Underlying Assumptions?

The National Retirement Risk Index is based on a number of assumptions. Changes in these assumptions can affect the Index scores for better or for worse. For example, while the base case shows that a large share of households is at risk, the situation is not hopeless. Households have control over key decisions, such as their retirement age and savings rates, that could substantially improve their retirement security. On the other hand, the outlook could also be worse than depicted in the base case, particularly if people fail to respond to the changing retirement landscape.

### Retirement Age

The retirement age determines the actuarial reduction or increase in Social Security benefits, the extent to which savings are augmented or drawn down, and the length of the period over which the household has to support itself on accumulated retirement resources. As Table 5 shows, retiring at 63 instead of the base case of 65 raises the share of households at risk by 10 percentage points. On the other hand, if households delay their retirement to age 67, Social Security's ultimate "Normal Retirement Age," they would dramatically improve their lot, reducing the share at risk by 11 percentage points. While working to 67 would represent a significant change in labor force participa-

tion patterns, it's not a "pie in the sky" assumption. Today's 50- and 60-year olds are healthier than previous generations, they have higher levels of education, and they tend to work at jobs that are less physically demanding.

TABLE 5. PERCENT OF HOUSEHOLDS "AT RISK" BY ASSUMED RETIREMENT AGE

Household type	Retirement Age		
	Earlier 63	Base Case 65	Later 67
All	53 %	43 %	32 %
Couples	51	43	32
One earner	34	23	11
Two earner	53	45	34
Singles	56	42	32

Source: Authors' calculations.

### Savings Rates

Another way for households to improve their retirement situation is to save more during their working lives. The impact of additional saving increases with the period over which households engage in the higher saving. That is, saving an additional 3 percent of earnings reduces the households at risk by only 3 percentage points for those approaching retirement but by 11 percentage points for Generation Xers (see Table 6). Going forward, it is possible that such increased saving could materialize through 401(k) plans as a result of reforms such as automatic enrollment,

TABLE 6. PERCENT OF HOUSEHOLDS "AT RISK" AT AGE 65 BY ASSUMED SAVING RATE

Household type	401(k)/IRA accumulations		
	Lower saving rate (-3 percent)	Base case	Higher saving rate (+3 percent)
All	47 %	43 %	36 %
Early Boomers	37	35	32
Late Boomers	50	44	38
Generation Xers	57	49	38

Source: Authors' calculations.

automatic escalation of the contribution rate, and life cycle funds. On the other hand, households might feel more squeezed in the future and might actually save even less than they do today. Therefore, Table 6 also shows the impact on households of saving 3 percent less.

### *A Less Favorable Scenario*

The Index's base case scenario assumes that households retire at 65, annuitize their financial assets, and tap their housing equity through a reverse mortgage. The notion is that these assumptions would allow households to take full advantage of their potential retirement resources. In practice, most households retire before 65, do not annuitize, and do not access their housing equity. If, instead, households retired at age 63, did not annuitize, and did not take out a reverse mortgage, the share at risk would soar from 43 percent under the Index base case to 66 percent (see Table 7).

TABLE 7. PERCENT OF HOUSEHOLDS "AT RISK" UNDER LESS FAVORABLE SCENARIO\*

Household type	All	Early	Late	Generation
		Boomers 1946-1954	Boomers 1955-1964	Xers 1965-1972
All	66 %	57 %	69 %	71 %
Couples	64	56	66	70
One earner	44	46	42	45
Two earner	66	57	68	73
Singles	69	59	77	73

Source: Authors' calculations.

\* This scenario assumes that — unlike the base case — households retire at 63, do not annuitize their financial assets, and do not take out a reverse mortgage.

## Conclusion

Ensuring retirement security for an aging population is one of the most significant challenges facing the nation. While many current retirees are doing quite well, the outlook for Baby Boomers and Generation Xers is far less sanguine. The National Retirement Risk Index analysis shows that even among the Early Boomers 35 percent of households are at risk of being unable to maintain their standard of living in retirement. The Early Boomers are the age group best prepared for retirement, because many have acquired benefits under traditional defined benefit plans and they are not fully exposed to the increase in Social Security's Normal Retirement Age. As Social Security's Normal Retirement Age moves to 67, defined benefit plans fade in an environment where total pension coverage remains stagnant, and life expectancy increases, the share of households at risk rises to 44 percent for the Late Boomers and 49 percent for members of Generation X.

The situation is not hopeless, however. Sensitivity analyses of the Index results show that changing retirement and savings behavior can substantially improve the outlook. Individuals, employers, and policymakers all have a role in bringing about these changes to ensure sufficient retirement income for an aging society.

## Endnotes

1 This *brief* summarizes the Index methodology and findings. For more details, see the accompanying full report: “Retirements at Risk: A New National Retirement Risk Index.”

2 For this study, working-age households are those between ages 32 and 58 in 2004. This group covers the entire Baby Boom generation and the older members of Generation X.

3 The Normal Retirement Age (NRA) is the age at which individuals are eligible to receive their full Social Security benefit. The increase in the NRA is a form of benefit cut — either individuals wait longer to claim their full benefit and receive it for fewer years or they claim before age 67 and receive a reduced benefit.

4 This amount includes Individual Retirement Account (IRA) balances, because most of the money in IRAs is rolled over from 401(k) plans.

5 This survey has been conducted every three years since 1983. It questions households about their income, wealth, pension coverage, and a host of other variables and provides a comprehensive snapshot of where American families are today. For a detailed description of the *Survey of Consumer Finances*, see Bucks, Kennickell, and Moore (2006).

6 In the case of couples, the assumption for calculating Social Security benefits is that the older spouse retires at age 65 and the younger spouse retires at the same time — with a minimum age of 62. For other components of retirement income, the retirement age is determined when the household head turns 65 — regardless of the age of the spouse.

7 The Index does not include income from work, since labor force participation declines rapidly as people age.

8 Both mortgage debt and non-mortgage debt are subtracted from the appropriate components of projected wealth.

9 For 401(k) assets, other financial wealth, and housing wealth, the assumption is that households convert the wealth into a stream of income by purchasing an inflation-indexed annuity — that is, an annuity that will provide them with a payment linked to the

Consumer Price Index for the rest of their lives. For couples, the annuity provides the surviving spouse two-thirds of the base amount. While inflation-indexed annuities are neither easily available nor popular with consumers, they provide a convenient tool for converting a lump sum of wealth into a stream of income. And while inflation-indexed annuities provide a smaller initial benefit than nominal annuities, over time they protect a household’s purchasing power against the erosive effects of inflation.

10 As with the components of retirement income, both mortgage debt and non-mortgage debt are subtracted from the appropriate components of pre-retirement income.

11 Target replacement rates vary by the type of household. For example, low-income households get most of their retirement income from Social Security and therefore need to do little saving before retirement. The result is that they get little break from no longer having to save in retirement. Similarly, low-income households pay little in taxes, so they enjoy little in the way of tax saving in retirement. Thus, low-income households need a high replacement rate in retirement. For more details on the calculation of target replacement rates, see the accompanying full *Report* and Palmer (2004).

12 The small decline in the Index between 1998 and 2001 may appear counter-intuitive given the onset of the bear market in 2000. However, movements in the stock market had relatively little effect on the trend in the Index over this period due to the timing of data collection for the SCF. Specifically, the 1998 SCF data were collected well before the March 2000 market peak, and the 2001 data well after the peak. In fact, the S&P 500 Index was at almost precisely the same level when the 1998, 2001, and 2004 surveys were conducted.

## References

Board of Governors of the Federal Reserve System. 1985-2006. *Survey of Consumer Finances*. Washington, DC.

Bucks, Brian K., Arthur B. Kennickell and Kevin B. Moore. 2006. "Recent Changes in U.S. Family Finances: Evidence from the 2001 and 2004 Survey of Consumer Finances." *Federal Reserve Bulletin*.

Center for Retirement Research at Boston College. 2006. "Retirements at Risk: A New National Retirement Risk Index." Chestnut Hill, MA.

Munnell, Alicia H. 2003. "The Declining Role of Social Security." *Just the Facts on Retirement Issues* 6. Chestnut Hill, MA: Center for Retirement Research at Boston College.

Palmer, Bruce A. 2004. *2004 GSU/Aon RETIRE Project Report*. Atlanta, Georgia: Center for Risk Management and Insurance Research at Georgia State University.



---

## About the Center

The Center for Retirement Research at Boston College was established in 1998 through a grant from the Social Security Administration. The Center's mission is to produce first-class research and forge a strong link between the academic community and decision makers in the public and private sectors around an issue of critical importance to the nation's future.

To achieve this mission, the Center sponsors a wide variety of research projects, transmits new findings to a broad audience, trains new scholars, and broadens access to valuable data sources. Since its inception, the Center has established a reputation as an authoritative source of information on all major aspects of the retirement income debate.

## Affiliated Institutions

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

## Contact Information

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