

# Middle Class Security Project

An Initiative of the AARP Public Policy Institute

## What Are the Retirement Prospects of Middle-Class Americans?

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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.

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## Table of Contents

<b>Executive Summary</b> .....	<b>1</b>
<b>Introduction</b> .....	<b>3</b>
<b>Methods</b> .....	<b>4</b>
Measuring Income .....	4
Health Care Spending .....	4
<b>Results</b> .....	<b>5</b>
Who Are Middle-Class Americans? .....	5
On What Sources of Income Will Future Retirees Rely? .....	6
Data Highlights .....	6
Benchmarks for Measuring Middle-Class Security .....	9
Health Care Costs .....	10
How the Middle Class Will Fare in Retirement: Median Income .....	12
Data Highlights .....	12
Current Retirees vs. Future Retirees .....	13
Demographic Characteristics .....	14
Age Cohorts .....	14
How the Middle Class Will Fare in Retirement: Poverty Rates .....	14
Data Highlights .....	14
Before Medical Costs .....	16
After Medical Costs .....	17
How the Middle Class Will Fare in Retirement: Replacement Rates .....	18
Data Highlights .....	18
Before Medical Costs .....	19
After Medical Costs .....	21
How the Middle Class Will Fare in Retirement: Keeping up with Future Middle-Class Standards of Living .....	21
Data Highlights .....	21
Before Medical Costs .....	22
After Medical Costs .....	22
How the Middle Class Will Fare in Retirement: Economic Mobility .....	24
Data Highlights .....	24
<b>Conclusions</b> .....	<b>25</b>
<b>Appendix</b> .....	<b>27</b>
DYNASIM3 .....	27
Projecting Health Care Spending .....	28
Projecting Pensions .....	28
Projecting Retirement Accounts .....	30
Projecting Financial Assets .....	31
Asset Income .....	31

## List of Tables

<b>Table 1.</b>	Sources of Median Per Capita Household Income at Age 70 among Current and Future Retirees.....	8
<b>Table 2.</b>	Sources of Median per Capita Household Income at Age 70 among Middle-Income Adults Age 25 to 54 in 2012.....	9
<b>Table 3.</b>	Mean per Capita Household MOOP Costs at Age 70 among Current and Future Retirees (2011 \$ thousands).....	11
<b>Table 4.</b>	Median Percentage of per Capita Household Income at Age 70 Spent on Health Care among Current and Future Retirees (%)......	12
<b>Table 5.</b>	Median per Capita Household Income at Age 70 among Current and Future Retirees (2011 \$ thousands).....	13
<b>Table 6.</b>	Median per Capita Household Income at Age 70 among Current and Future Retirees (2011 \$ thousands).....	15
<b>Table 7.</b>	Poverty Rates at Age 70 among Current and Future Retirees (%).....	16
<b>Table 8.</b>	Median Income Replacement Rates at Age 70 among Current and Future Retirees (%).....	20
<b>Table 9.</b>	Distribution of Income Replacement Rates at Age 70 among Current and Future Retirees (%).....	21
<b>Table 10.</b>	Ratio of Median Income to the National Average Wage at Age 70 among Current and Future Retirees (%).....	23
<b>Table A1.</b>	Logit Regression Results of the Likelihood of Having Out-of-Pocket Medical Expenses among Adults Age 55+, 2009.....	28
<b>Table A2.</b>	OLS Regression Results of Out-of-Pocket Medical Expenses among Adults Age 55+ with Expenses, 2009.....	29
<b>Table A3.</b>	Comparison of DYNASIM 2012 estimates with Published Statistics.....	32

## List of Figures

<b>Figure 1.</b>	Educational Attainment of Adults Age 25–54 in 2012, by Income Group in 2012.....	5
<b>Figure 2.</b>	Race and Ethnicity of Adults Age 25–54 in 2012, by Income Group in 2012.....	6
<b>Figure 3.</b>	Years of Work Experience Among Adults Age 25–54 in 2012, by Income Group in 2012.....	6
<b>Figure 4.</b>	Median Own Lifetime Earnings of Adults Age 25–54 in 2012, by Age and Income Group in 2012.....	7
<b>Figure 5.</b>	Distribution of Household Income at Age 70 Among Middle Income Adults Age 25–54 in 2012 (Mobility).....	25

## EXECUTIVE SUMMARY

The past three decades have been difficult for middle-class Americans. Wages have stagnated, and jobs have become less secure. Employee contributions to workplace health insurance and retirement plans have reduced take-home pay. Skyrocketing health care costs and college tuitions have further strained family budgets. The Great Recession and ongoing financial crisis, which eliminated millions of jobs and wiped out trillions of dollars in household wealth, have tightened the squeeze on middle-class families and cast a shadow on the future retirement prospects of today's workers.

The Urban Institute uses statistical analyses to project various measures of the future retirement prospects of workers ages 25 to 54 in 2012, with a particular focus on middle-class workers. Middle class is defined as those whose household income falls in the middle third of the income distribution. The model compares the retirement prospects of current workers (future retirees) to current retirees and compares the prospects of various subgroups of future retirees by age cohort, income level, educational attainment, race/ethnicity, and gender/marital status. Because of the critical role of escalating healthcare costs, the model also compares retirement prospects before and after accounting for projected increases in medical out-of-pocket (MOOP) costs.

### What will the incomes of future retirees look like?

- **Future retirees are predicted to have only slightly more retirement income than today's retirees.** Median retirement income is projected to be \$34,500 (in 2012 dollars) for future retirees, a 20 percent increase from current retirees.
- **Medical expenses will wipe out the small retirement income gains for future retirees.** When out-of-pocket medical expenses are taken into account, the median retirement income of future retirees (at age 70), net of health expenses, is expected to be about \$27,000—the same as that of current retirees.
- **Social Security will be the main source of retirement income for future retirees at all income levels.** Social Security will account for 51 percent of per capita household income for future middle-income retirees—69.2 percent for low-income workers and 35.4 percent for high-income workers. Social Security will be especially important as a backstop for the 30 percent of middle-income workers who are projected to be downwardly mobile as low-income retirees—Social Security will represent 81.6 percent of retirement income for this group.
- **Continuing to work will be one of the key ways of maintaining security in retirement.** Among middle-income workers who achieve high-income status in retirement, 64 percent are projected to be working at age 70, and 38 percent will have working spouses, adding \$29,500 to their incomes (37 percent of total income) through their earnings.
- **Retirement income gaps are projected to narrow over time among racial and ethnic groups.** Compared to the incomes of current retirees, the retirement incomes of the youngest cohort (age 25–34) are projected to increase by 95 percent among non-Hispanic blacks, 202 percent among Hispanics, and 86 percent among Asians/Native Americans, compared to only 44 percent among non-Hispanic whites.
- **The recent recession will negatively affect older cohorts of current workers.** Among 45- to 54-year-olds in the middle-income category, college graduates are



expected to have 19 percent less income at age 70 than current retirees, because they have fewer years before retirement to regain their losses from the Great Recession and to benefit from wage growth.

### Will future retirees be able to meet basic needs?

- **Projected declines in the poverty rate among retirees will be eliminated by increased health care costs.** The poverty rate, as measured by this study, is projected to decline from 9.7 percent among current retirees to 3.4 percent among middle-income workers when they retire. However, after taking MOOP costs into account, the poverty rate will remain virtually unchanged—16.8 percent among current retirees and 16.4 percent among middle-income workers when they retire.
- **MOOP expenses will take an increasing share of retirement incomes.** MOOP currently averages \$2,800 a year, which is 8.2 percent of income. Median annual MOOP expenses will be \$5,600 per person, or 15.3 percent of income, for middle-income workers aged 45–54 (in 2012) when they are 70 years old. Those currently age 25–34 can expect to pay \$11,000 per person, or 19.7 percent of income at age 70.

### Will current workers be able to maintain their current standard of living in retirement?

- **Future retirees are less likely than current retirees to maintain their standard of living during retirement.** The median replacement rates (the ratio of per capita household income at age 70 to average per capita shared earnings between ages 25 and 70) is 80 percent for current retirees, compared to 73 percent for future retirees.
- **MOOP expenses have a greater impact on the replacement rate of future retirees.** When medical expenses are taken into consideration, the replacement rate for current retirees declines from 80 percent to 70 percent (a 12 percent decrease). However, medical expenses are projected to further erode the retirement well-being of future retirees, decreasing the median replacement rate from 73 percent to 55 percent (a 25 percent decrease).

### Will current workers be able to attain the middle-class lifestyle of the future when they retire?

- **Future retirees will fall far behind their working-age contemporaries and the middle-class standard of living of the future.** The current median income at age 69–71 is 66 percent of the national average wage. Among middle-income workers, retirement incomes are projected to be only 52 percent of the average national wage.
- **Once again, health care costs will further erode the ability to keep up with middle-class standards of the future.** After taking MOOP into account, the future retirement incomes of current middle-income workers will only be 41 percent of the average national wage.

## INTRODUCTION

The declining security of the middle class in America has received increasing attention from academics, the popular media, and policymakers. Stagnating wages that do not keep pace with basic expenses have given rise to worries that the middle class is shrinking and that the American dream is only a dream. A number of studies have considered how working-age middle-class Americans are doing today and how they have fared historically. The White House Task Force on the Middle Class found that, during the past several decades, the growth in family income has decreased. Real median family income grew at an annual rate of 2.4 percent between 1947 and 1979, roughly in line with productivity growth.<sup>1</sup> After 1979, however, the growth in real median family income slowed to only 0.4 percent per year and became increasingly disconnected from productivity growth. The weak labor market of the 2000s resulted in a decline in the median income of 3.4 percent between 2000 and 2007 and by another 3.3 percent during 2008 alone.

Burkhauser, Larrimore, and Simon<sup>2</sup> demonstrate that the answers to the question “How have the middle class fared?” differ depending on the litmus test being used. They found that when using pretax, pretransfer income, median income increased 3.2 percent in real terms from 1979 to 2007. But when using the broadest definition of income—post-tax, post-transfer income with health insurance—median income increased 18.2 percent over the same period.

Even researchers who disagree that the middle class is shrinking or that middle-class Americans today have fewer resources than their predecessors agree that income and wealth inequality has increased and that the middle class has not experienced gains of the magnitudes experienced by those with high incomes, and especially those at the very top. However, little discussion has focused on what these trends may mean for the middle class’s future retirement security, especially if traditional defined benefit (DB) plans continue to fade away, retiree health insurance coverage declines, and proposals to cut Social Security benefits succeed.

This study attempts to fill that research gap by assessing the retirement prospects of today’s working-age middle-class population using the Urban Institute’s DYNASIM3 model. We evaluate the income sources and economic security of future retirees based on several measures, including income comparisons to current retirees, ability to maintain the living standards of their working years, and poverty rates. Because escalating health care costs are particularly critical to retirement security, our projections compare the economic security measures before and after deducting MOOP expenditures—illustrating how modest projected improvements in income could easily be eliminated by anticipated increases in health care costs. Finally, we compare retirement outcomes for a variety of subgroups by income level, age cohort, educational attainment, race/ethnicity, and gender/marital status.

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<sup>1</sup> Office of the Vice President of the United States, *Annual Report of the White House Task Force on the Middle Class* (2010).

<sup>2</sup> Richard V. Burkhauser, Jeff Larimore, and Kosali I. Simon, *A “Second Opinion” on the Economic Health of the American Middle Class*, NBER Working Paper No. 17164 (Cambridge, MA: National Bureau of Economic Research, 2011).

## METHODS

To assess the retirement prospects of today's middle-class Americans, we project incomes at age 70 for adults age 25 to 54 in 2012 using the Urban Institute's Dynamic Simulation of Income Model, DYNASIM3 (see the appendix for detailed information on the model). We focus on age 70 because the vast majority of workers have retired by then. We compare future retirement resources and retirement security between 2028 and 2057 (the years when each birth cohort turns age 70) with the resources of current retirees age 69 to 71 in 2012.<sup>3</sup>

### Measuring Income

Our measure of household income is similar to the one used by the Census Bureau, which includes earnings, interest, dividends, rental income, Supplemental Security Income (SSI), Social Security benefits, and DB pension income. In light of the trend away from DB pensions toward retirement accounts, we also assume income generated from annuitizing 80 percent<sup>4</sup> of retirement account balances in order to make a more reasonable comparison between current and future retirees. We sum all the income sources received by the respondent and spouse and divide by two if married to calculate per capita household income. Unless otherwise noted, all financial amounts are reported in constant 2011 dollars (adjusted by the projected change in the Consumer Price Index).

We identify middle-class adults as those whose per capita household income in 2012 falls in the middle third of the income distribution—between the 34<sup>th</sup> and 66<sup>th</sup> percentiles. For our sample, the middle-class income thresholds range from about \$17,800 per person to about \$40,400 per person. To give these numbers context, DYNASIM3 estimates that median income over all adults age 25 to 54 in 2012 was about \$28,400 per person.<sup>5</sup>

### Health Care Spending

For this study, we project MOOP expenses using 2009 data from the Medical Expenditure Panel Survey (MEPS), a nationally representative survey of the civilian noninstitutionalized population in the United States. Our measure of medical expenses includes per capita out-of-pocket expenses and private employer health insurance premiums. After projecting out-of-pocket expenses, we add Medicare Part B and Part D premiums for retirees.<sup>6</sup> We assume that future health care expenditures will increase according to the 2012

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<sup>3</sup> Ideally, we would compare future retirees at age 70 with current retirees at the same age. To avoid problems associated with small sample sizes, however, we expanded our analysis of current retirees in 2012 to include those age 69 to 71.

<sup>4</sup> Eighty percent of assets are annuitized to account for the risk of outliving one's assets. Individuals must set aside part of their wealth (we assume 20 percent) to self-insure against the risk of outliving their assets if they are unwilling to purchase an annuity at the rates available to them in private markets.

<sup>5</sup> Using the Pew definition of middle class, our middle-class income thresholds would instead range from \$21,300 (.75\*\$28,400) to \$42,600 (1.5\*\$28,400)—further evidence that the two definitions of middle income capture virtually all the same people. Pew Research Center, *Inside the Middle Class: Bad Times Hit the Good Life* (Washington, DC: Pew Research Center, 2008).

<sup>6</sup> The projections do not include modeling the Medicare Part D coverage gap (informally known as the Medicare donut hole).

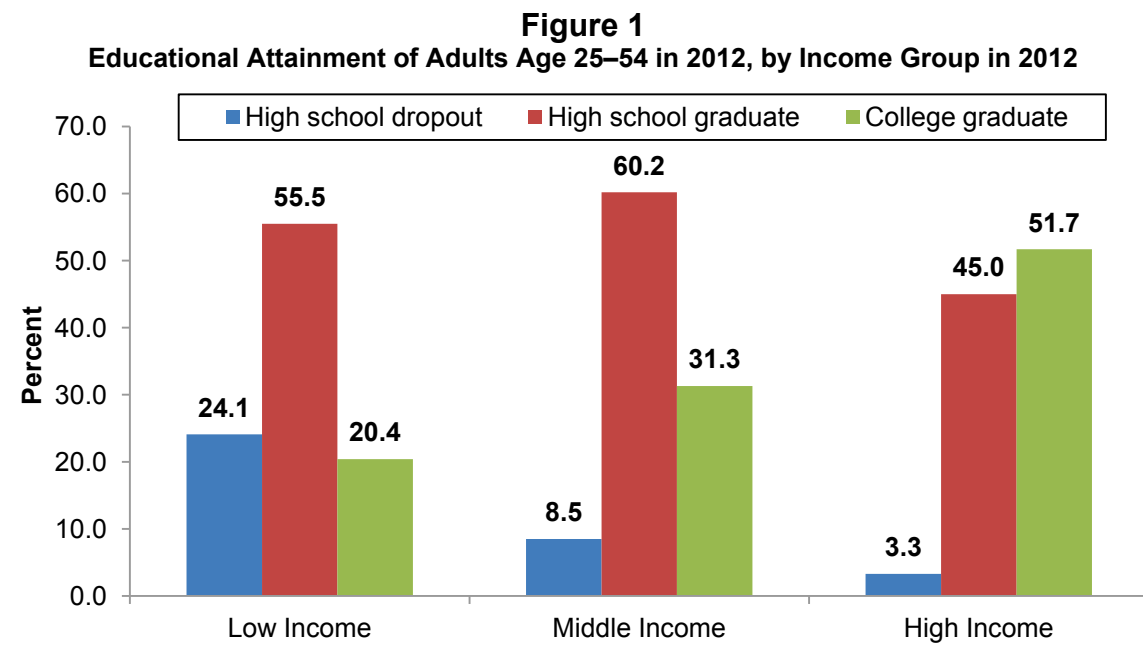
Medicare trustees' intermediate assumptions<sup>7</sup> of 4.3 percent per year overall, 4.1 percent per year for Part B premiums, and 5.1 percent per year for Part D premiums (see the appendix for more detailed information on how MOOP costs were estimated).

## RESULTS

### Who Are Middle-Class Americans?

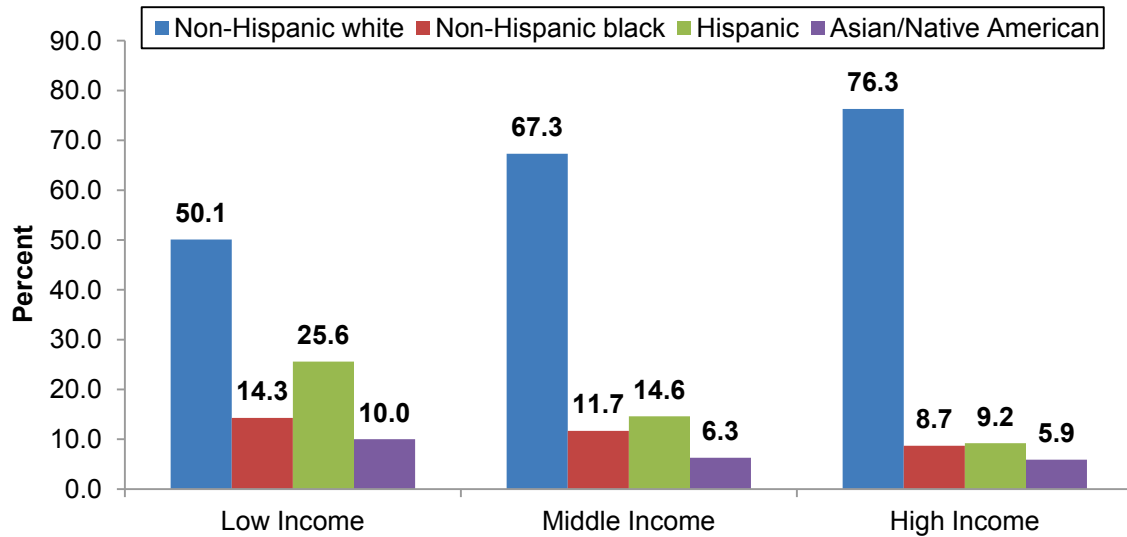
Confirming what is already known, DYNASIM3 estimates that the socioeconomic characteristics of working-age Americans in 2012 are strongly correlated with income. For example, fewer than a third of middle-income adults have college degrees, compared with more than half of high-income adults and only a fifth of low-income adults (figure 1). In addition, 23 percent of middle-income adults are from racial or ethnic minority groups, compared with only 14 percent of high-income adults and 50 percent of low-income adults (figure 2).

Over their careers, middle-income adults have more work experience and higher average career earnings than low-income adults and less experience and lower career earnings than high-income adults. More than 63 percent of today's working-age middle-income adults are expected to work 35 or more years through age 70 (figure 3). In contrast, only 32 percent of low-income adults and 76 percent of high-income adults are projected to work for 35 or more years. Median annual lifetime earnings of today's working-age adults are projected to be \$36,000 for the middle-income group, only \$15,900 for the low-income group, and \$62,300 for the high-income group (figure 4).



<sup>7</sup> According to the 2012 Medicare Trustees' Report, the assumptions about the growth in health care spending account for the Affordable Care Act.

**Figure 2**  
Race and Ethnicity of Adults Age 25–54 in 2012, by Income Group in 2012

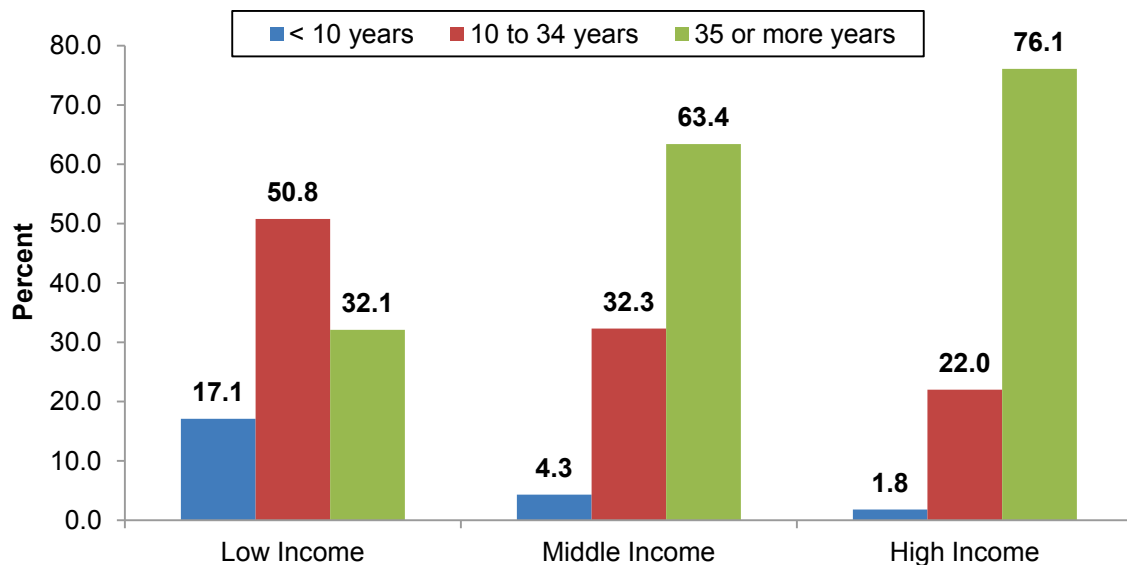


**On What Sources of Income Will Future Retirees Rely?**

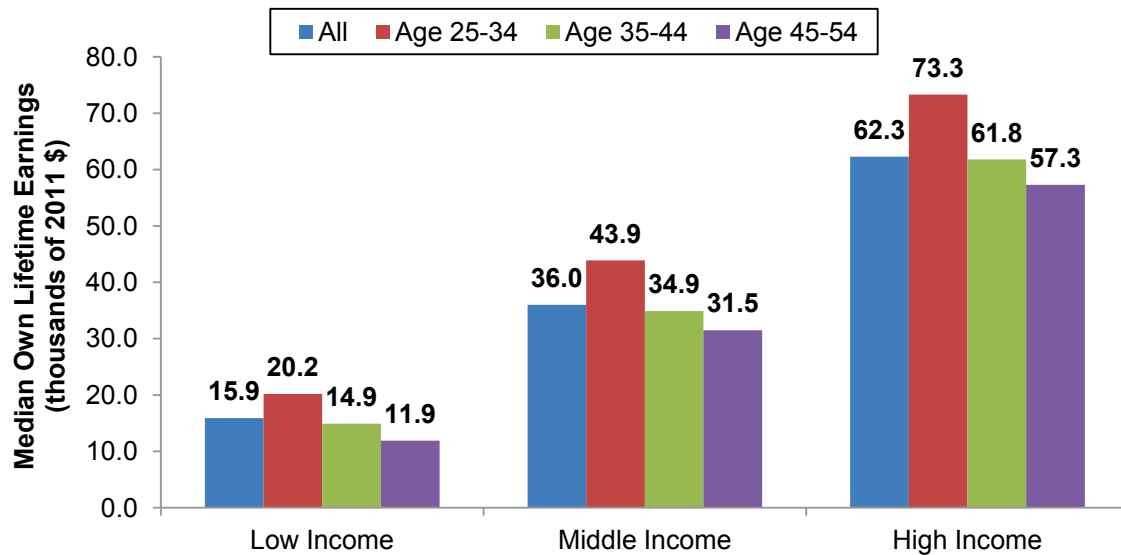
**Data Highlights**

- Social Security benefits will continue to be the most significant source of income at age 70 among all income levels of current workers.
- The percentage of workers with income from earnings from continued work rises with income level.
- High-income workers hold sources of income that provide higher returns (such as retirement accounts, dividends, and interest income) than those with lower incomes.

**Figure 3**  
Years of Work Experience Among Adults Age 25–54 in 2012, by Income Group in 2012



**Figure 4**  
**Median Own Lifetime Earnings of Adults Age 25–54 in 2012, by Age and Income Group in 2012**



Social Security will continue to be the most significant source of income at age 70 for all income groups (table 1). Social Security will account for \$17,600 or 51 percent of median retirement income (at age 70) for these middle-income workers.<sup>8</sup> Compared with middle-income adults, Social Security will be significantly more important for low-income adults—representing 69 percent of their future retirement incomes—and significantly less important for high-income adults—representing only 35 percent of their retirement incomes.

A larger percent of high-income workers will continue to work during retirement and receive a larger share of retirement income from the earnings gained from working. Only 25 percent of working-age low-income adults are projected to have earned income at age 70. In contrast, almost 35 percent of middle-income adults and 44 percent of high-income adults are expected to work at age 70.

Almost 70 percent of current working-age middle-income adults will have retirement account income at age 70. In contrast, 46 percent of the low-income workers and 81 percent of current high-income workers will have retirement account income. Despite the fact that fewer employers are offering DB pension accounts, 53 percent of current high-income workers, 46 percent of middle-income workers, and 32 percent of low-income workers will have a DB pension account at age 70. Tables 1 and 2 show that high-income workers hold sources of income that provide higher returns (such as retirement accounts, dividends, and interest income) than workers with lower incomes.

<sup>8</sup> For median income, we use the mean per capita household income between the 45<sup>th</sup> and 55<sup>th</sup> percentiles of the distribution. This statistic better describes outcomes for typical people than the mean for the entire population because it is less sensitive to extreme values. It does not rely on a single observation, which may not be representative of people in the center of the distribution. By using 10 percent of the sample, our statistic better describes the composition of income for typical cases.

**Table 1**  
**Sources of Median Per Capita Household Income at Age 70**  
**among Current and Future Retirees**

		Income Group in 2012			
		Low	Middle	High	All
Age in 2012		25–54	25–54	25–54	70
Year Age 70		2028–57	2028–57	2028–57	2012
<b>Share with Income (%)</b>	Total income	97.4	99.7	100.0	99.0
	Interest	54.9	67.6	77.5	66.8
	Dividends	24.0	35.3	52.9	37.7
	Rental income	6.0	8.5	13.4	8.7
	Earnings	25.1	34.6	43.8	30.9
	Spouse earnings	19.0	24.2	29.1	21.8
	SSI	7.1	0.7	0.1	4.4
	Social Security benefits	83.9	96.5	98.3	92.6
	DB pension income	31.9	45.7	52.8	46.6
	Retirement account income	46.0	68.6	81.0	65.9
<b>Median Income (2011 \$ thousands)</b>	Total income	18.2	34.5	63.6	28.7
	Interest	0.6	1.5	3.2	1.5
	Dividends	0.2	0.7	2.7	0.7
	Rental income	0.1	0.4	0.9	0.1
	Earnings	1.4	3.8	9.5	2.6
	Spouse earnings	1.2	3.2	6.6	2.1
	SSI	0.1	0.0	0.0	0.0
	Social Security benefits	12.6	17.6	22.5	14.3
	DB pension income	0.8	2.7	6.5	3.9
	Retirement account income	1.1	4.6	11.8	3.4
<b>Share of Total Income (%)</b>	Total income	100.0	100.0	100.0	100.0
	Interest	3.3	4.3	5.0	5.2
	Dividends	1.1	2.0	4.2	2.4
	Rental income	0.5	1.2	1.4	0.3
	Earnings	7.7	11.0	14.9	9.1
	Spouse earnings	6.6	9.3	10.4	7.3
	SSI	0.5	0.0	0.0	0.0
	Social Security benefits	69.2	51.0	35.4	49.8
	DB pension income	4.4	7.8	10.2	13.6
	Retirement account income	6.0	13.3	18.6	11.8

Source: DYNASIM3 microsimulation model.

Note: Median income is mean per capita household income between the 45<sup>th</sup> and 55<sup>th</sup> percentiles of the distribution.

**Table 2**  
Sources of Median per Capita Household Income at Age 70  
among Middle-Income Adults Age 25 to 54 in 2012

		Income Group at Age 70		
		Low	Middle	High
<b>Share with Income (%)</b>	Total income	99.2	100.0	100.0
	Interest	52.0	69.9	80.4
	Dividends	13.9	35.0	57.3
	Rental income	3.4	7.5	15.2
	Earnings	9.0	32.5	63.6
	Spouse earnings	8.2	25.8	38.1
	SSI	2.3	0.0	0.0
	Social Security benefits	92.5	98.1	98.6
	DB pension income	31.3	48.5	56.5
	Retirement account income	44.5	74.1	85.6
	<b>Median Income (2011 \$ thousands)</b>	Total income	16.3	34.7
Interest		0.4	1.6	4.2
Dividends		0.2	0.8	2.9
Rental income		0.1	0.3	1.8
Earnings		0.4	3.8	18.2
Spouse earnings		0.4	3.4	11.3
SSI		0.0	0.0	0.0
Social Security benefits		13.3	17.4	20.9
DB pension income		0.8	2.7	7.7
Retirement account income		0.8	4.6	13.0
<b>Share of Total Income (%)</b>		Total income	100.0	100.0
	Interest	2.5	4.6	5.3
	Dividends	1.2	2.3	3.6
	Rental income	0.6	0.9	2.3
	Earnings	2.5	11.0	22.8
	Spouse earnings	2.5	9.8	14.2
	SSI	0.0	0.0	0.0
	Social Security benefits	81.6	50.1	26.2
	DB pension income	4.9	7.8	9.6
	Retirement account income	4.9	13.3	16.3

Source: DYNASIM3 microsimulation model.

Note: Median income is mean per capita household income between the 45<sup>th</sup> and 55<sup>th</sup> percentiles of the distribution.

### Benchmarks for Measuring Middle-Class Security

There are many ways to evaluate the adequacy of the projected retirement incomes of middle-income workers, any of which require making comparisons to one or another benchmark. This report uses four benchmarks to measure how future cohorts of retirees will fare:

- **Median Incomes**—The first benchmark looks at trends in median incomes to evaluate retirement security.
- **Replacement Rates**—Replacement rates measure the ratio of retirement income to income during working years and serve as a measure of the ability to maintain one's level of consumption and lifestyle in retirement.



- **Poverty Rates**—Poverty rates are an absolute measure of the ability to meet basic needs.
- **Comparison to Middle-Class Standards of the Future**—The fourth benchmark compares the projected incomes of future retirees with the projected wages of their working-age contemporaries to assess the ability of future retirees to maintain the middle-class standards of living in the future.

The sections below will use the four benchmark measures to compare the economic security of future retirees with that of current retirees, and to make similar comparisons on social and demographic characteristics such as income levels, age cohorts, educational attainment, race/ethnicity, and gender/marital status. In each case, the benchmarks will be analyzed pre- and post-MOOP costs to demonstrate the impact of such costs on middle-class security if they continue to rise as projected.

### Health Care Costs

Out-of-pocket medical costs must be included in an evaluation of the economic security of future retirees, since rising health care costs play a disproportionate role in the household budgets of retirees. DYNASIM3 projects that MOOP expenses will increase substantially for future retirees, which will negatively affect each of the four benchmark measures of security. MOOP costs currently average \$2,800 a year,<sup>9</sup> which is 8.2 percent of income<sup>10</sup> (table 3). Median annual MOOP costs are projected to double to \$5,600 per person per year, or 15.3 percent of income, for middle-income workers aged 45–54 (in 2012) when they are 70 years old. Those currently age 25–34 can expect to pay nearly four times as much as current retirees for MOOP costs—\$11,000 per person per year, which is projected to be 19.7 percent of their incomes at age 70.<sup>11</sup>

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<sup>9</sup> When not measured on a per capita basis, \$2,800 per person is roughly \$4,600. A recent study found that household spending on health care among Medicare beneficiaries averaged \$4,527 in 2010 dollars or approximately \$4,690 in 2011 dollars. Juliette Cubanski, Anthony Damico, Zachary Levinson, Jennifer Huang, and Tricia Neuman, “Health Care on a Budget: The Financial Burden of Health Spending by Medicare Households,” *Data Spotlight* No. 8171-02 (Menlo Park, CA: The Henry J. Kaiser Family Foundation, 2012). Thus, the DYNASIM estimates for average MOOP among 70-year-olds in 2012 are comparable.

<sup>10</sup> These estimates may be lower than those reported in other studies based on the Medicare Current Beneficiary Survey (MCBS), such as Claire Noel-Miller, “Medicare Beneficiaries Out-of-Pocket Spending for Health Care,” AARP Public Policy Institute, May 2012. This difference reflects, in part, the broader definition of income used in this report relative the MCBS’ definition of income. Furthermore, the MEPS and the MCBS draw different boundaries around health care spending, which are likely to lead to lower health care spending figures in the MEPS. For example, MEPS excludes nursing home and facility residents and does not include payments for alternative/ complementary care services.

<sup>11</sup> For 45- to 54-year-old middle-class adults in 2012, who turn 70 between 2028 and 2037, \$5,600 per person is \$9,400 when not measured on a per capita basis (not shown). Johnson and Mommaerts used a similar methodology to project MOOP using DYNASIM. They project mean annual MOOP in 2040 to be \$7,832 in 2008 dollars or approximately \$8,200 in 2011 dollars. Richard W. Johnson and Corina Mommaerts, *Will Health Care Costs Bankrupt Aging Boomers?* (Washington, DC: Urban Institute, 2010). While projected MOOP differs somewhat between the two studies, it is remarkably similar, and the median values are even closer. Our projected median MOOP for this income and age group is \$7,000 when not measured on a per capita basis (not shown). In Johnson and Mommaerts, the projected median in 2040 is \$6,214 in 2008 dollars or approximately \$6,500 in 2011 dollars.

**Table 3**  
**Mean per Capita Household MOOP Costs at Age 70 among Current and Future Retirees (2011 \$ thousands)**

		Income Group in 2012									
		Low			Middle			High			All
Age in 2012		25–34	35–44	45–54	25–34	35–44	45–54	25–34	35–44	45–54	70
Year Age 70		2048–57	2038–47	2028–37	2048–57	2038–47	2028–37	2048–57	2038–47	2028–37	2012
<b>All</b>		9.3	6.5	4.6	11.0	7.9	5.6	12.0	8.5	6.3	2.8
<b>Gender: Marital Status</b>	Female: Married	9.9	6.8	4.7	10.9	8.1	5.6	12.1	8.5	6.3	2.6
	Female: Unmarried	8.6	5.8	4.1	10.6	7.3	5.1	12.1	7.8	5.8	2.8
	Male: Married	9.6	7.1	5.1	10.9	8.4	6.1	11.4	8.9	6.6	2.8
	Male: Unmarried	9.2	6.0	4.6	12.0	7.5	5.5	13.4	8.3	6.0	3.2
<b>Education</b>	High school dropout	6.0	4.8	3.5	8.5	6.4	4.7	9.0	6.5	5.1	2.1
	High school graduate	9.3	6.6	4.9	10.4	7.7	5.6	11.1	8.0	5.9	2.9
	College graduate	11.9	8.4	5.9	12.2	8.8	6.2	12.9	9.0	6.7	3.1
<b>Race/Ethnicity</b>	Non-Hispanic white	11.1	7.6	5.5	11.7	8.4	5.9	12.9	8.8	6.4	2.9
	Non-Hispanic black	8.0	5.6	3.7	10.4	7.4	5.0	9.1	7.2	5.9	2.2
	Hispanic	6.5	4.9	3.2	8.4	6.1	4.2	9.3	6.8	4.9	1.7
	Asian/Native American	9.8	6.8	4.9	11.0	9.0	6.2	11.6	8.4	6.4	2.5
<b>Lifetime Work Experience</b>	< 10 years	7.0	4.9	3.3	10.0	7.6	4.8	10.3	7.4	5.9	2.2
	10 to 34 years	9.3	6.6	4.6	10.5	7.7	5.3	10.9	7.9	5.9	2.7
	35 or more years	10.3	7.5	5.5	11.3	8.1	5.9	12.4	8.7	6.3	2.9
<b>Retirement Income Quintile</b>	Bottom	5.8	3.8	2.8	9.2	6.8	4.9	9.6	7.4	5.5	2.1
	Second	9.2	6.1	4.1	10.6	7.8	5.5	11.1	8.0	6.2	2.9
	Third	9.6	7.2	5.4	11.0	7.9	5.6	11.8	8.5	6.5	3.0
	Fourth	11.1	7.2	5.1	12.4	8.3	6.0	13.7	8.8	6.6	2.9
	Top	11.0	8.2	5.7	11.8	8.9	6.2	13.8	9.6	6.4	3.0

Source: DYNASIM3 microsimulation model.

Note: Quintiles are calculated within income and age group.

## What Are the Retirement Prospects of Middle-Class Americans?

Current low-income working adults are projected to have the largest percentage of their retirement income devoted to paying for medical expenses and current-high income working adults the least. Without policies to control the rising cost of health care, low- and middle-income workers will continue to be burdened by these increasing medical costs and will have to devote a larger percentage of their retirement income toward financing health care. Today's low-income workers are projected to pay more than a quarter (27 percent) of their incomes for MOOP costs (table 4), compared to almost 18 percent of retirement income for current working-age middle-income adults and a little over 10 percent for those with high incomes.

### How the Middle Class Will Fare in Retirement: Median Income

#### Data Highlights

- Median per person retirement income is projected to be 20 percent higher for future retirees than current retirees. However, MOOP costs will eliminate most of those gains, limiting income increases to only 4 percent net of MOOP.
- Future retirees (current middle-income workers) are expected to have significantly higher median retirement (age-70) income than today's most economically vulnerable groups—unmarried women, those without high school degrees, and Hispanics.

**Table 4**  
**Median Percentage of per Capita Household Income at Age 70 Spent on Health Care among Current and Future Retirees (%)**

		Income Group in 2012						
		Low	Middle	High	Middle			All
Age in 2012		25–54	25–54	25–54	25–34	35–44	45–54	70
Year Age 70		2028–57	2028–57	2028–57	2048–57	2038–47	2028–37	2012
<b>All</b>		27.6	17.8	10.3	19.7	18.9	15.3	8.3
<b>Gender:</b>	Female: Married	28.0	18.4	11.2	21.0	20.0	15.2	7.7
<b>Marital Status</b>	Female: Unmarried	26.0	16.7	9.0	18.2	17.4	14.2	9.9
	Male: Married	27.7	18.2	10.4	19.5	19.2	16.3	7.8
	Male: Unmarried	28.8	17.4	9.5	19.4	17.9	15.2	9.1
<b>Education</b>	High school dropout	31.6	23.3	14.2	24.8	24.3	20.4	14.1
	High school graduate	27.9	18.4	11.7	21.5	19.5	16.0	8.6
	College graduate	23.3	15.3	8.9	16.7	16.2	12.2	5.5
<b>Race/Ethnicity</b>	Non-Hispanic white	26.7	17.1	10.0	19.5	18.0	14.7	7.8
	Non-Hispanic black	29.6	21.6	12.4	24.0	22.5	19.4	11.4
	Hispanic	26.7	17.7	10.5	18.1	19.2	15.3	12.3
	Asian/Native American	31.7	18.9	10.9	19.4	21.0	16.1	9.6
<b>Lifetime Work Experience</b>	< 10 years	36.8	24.7	16.9	31.9	25.8	18.4	11.9
	10 to 34 years	30.7	24.3	15.9	27.8	26.0	19.8	11.9
	35 or more years	21.6	14.8	9.0	16.1	15.3	13.4	6.8
<b>Retirement Income Quintile</b>	Bottom	78.1	39.4	23.8	43.6	43.4	33.1	21.3
	Second	40.8	24.6	14.0	27.5	27.0	20.8	13.9
	Third	29.8	17.2	9.7	18.8	18.6	14.6	8.7
	Fourth	19.6	11.9	6.5	13.1	11.9	9.9	5.6
	Top	10.0	6.9	3.6	6.9	6.8	5.9	3.0

Source: DYNASIM3 microsimulation model.

Note: Quintiles are calculated within income and age group.

## What Are the Retirement Prospects of Middle-Class Americans?

- The age cohorts closest to retirement in 2012—ages 45–54—are projected to have lower retirement incomes than the cohorts that follow, since they will have fewer years to recover from the losses sustained during the recent recession.

### Current Retirees vs. Future Retirees

Median per person retirement income is projected to be about 20 percent higher for future retirees than current retirees (table 5), rising to \$34,500 per person for middle-income future retirees (adults age 25–54 in 2012) compared with \$28,800 for current retirees (adults age 69–71 in 2012).<sup>12</sup> However, when MOOP costs are included, this increase largely disappears—rising only 4 percent from \$25,900 among current retirees to \$26,900 for future retirees. Income differences will persist into retirement—working-age low-income adults are projected to have a median per person income of only \$18,100 at age 70, and high-income adults are projected to have \$63,700 per person at the same age.

**Table 5**  
Median per Capita Household Income at Age 70 among Current and Future Retirees  
(2011 \$ thousands)

		Income Group in 2012			
		Low	Middle	High	All
<b>Age in 2012</b>		25–54	25–54	25–54	70
<b>Year Age 70</b>		2028–57	2028–57	2028–57	2012
<b>All</b>		18.1	34.5	63.7	28.8
<b>Gender: Marital Status</b>	Female: Married	19.5	33.9	59.9	29.5
	Female: Unmarried	15.9	33.8	67.0	23.0
	Male: Married	20.9	36.5	64.7	31.5
	Male: Unmarried	15.7	31.8	64.8	29.7
<b>Education</b>	High school dropout	10.9	20.9	38.5	13.1
	High school graduate	18.5	31.6	52.1	28.5
	College graduate	31.9	47.3	78.1	50.9
<b>Race/Ethnicity</b>	Non-Hispanic white	21.8	37.6	66.9	32.2
	Non-Hispanic black	14.4	26.0	47.8	16.3
	Hispanic	14.3	28.4	57.3	12.5
	Asian/Native American	16.9	35.1	60.9	21.8
<b>Lifetime Work Experience</b>	< 10 years	9.2	22.1	33.8	13.0
	10 to 34 years	16.4	23.5	38.8	18.3
	35 or more years	29.4	43.3	73.1	38.9
<b>Retirement Income Quintile</b>	Bottom	5.7	14.0	23.9	9.4
	Second	11.6	23.0	42.1	17.3
	Third	18.1	34.5	63.7	28.8
	Fourth	30.0	53.1	95.7	44.6
	Top	60.9	94.1	171.3	80.6

Source: DYNASIM3 microsimulation model.

Notes: Lifetime work experience is the number of years individuals had positive earnings from age 25 to age 70. Shared lifetime earnings is the average of the 35 highest years of wage-indexed shared earnings between ages 25 and 70, where shared earnings are half the total earnings of the couple in the years when married and individual earnings in years when not married. Quintiles are calculated within income group.

<sup>12</sup> Appendix table A3 compares DYNASIM estimates of median income in 2012 with published statistics from the Social Security Administration, *Income of the Population 55 or Older*. The table shows that the different sources produce similar statistics.

### **Demographic Characteristics**

Incomes are projected to be significantly higher in the future than they are today for the most economically vulnerable groups—unmarried women, those without high school degrees, Hispanics, those with little lifetime work experience, and those with the lowest lifetime earnings and retirement incomes (table 5). Among Hispanics, for example, median retirement income is projected to more than double, from \$12,500 for today’s retirees to \$28,400 for future retirees. Retirement income gaps are projected to narrow over time among racial and ethnic minorities, as younger age cohorts do comparatively better (table 6). Compared to the incomes of current retirees in these groups, the median retirement incomes of the youngest cohort (age 25–34) are projected to increase by 95 percent among non-Hispanic blacks, 202 percent among Hispanics, and 86 percent among Asians/Native Americans, compared to only 44 percent among non-Hispanic whites. Despite some of these gains, married adults, college graduates, non-Hispanic whites, those with strong work histories (not shown), and those with the highest earnings are projected to have the highest retirement incomes at age 70.

### **Age Cohorts**

Age cohorts closest to retirement in 2012 will experience lower increases in their retirement incomes than current retirees (table 6). These older cohorts, ages 45–54, have fewer years before retirement to recover their losses from the recent stock market crash and Great Recession, and to benefit from real wage growth.<sup>13</sup> These events are projected to have more impact on those who are economically well off because they had the most to lose. Indeed, among 45-to 54-year-old middle-income adults, college graduates are expected to have 19 percent less income at age 70 than today’s retirees who are college grads. Each successive birth cohort is projected to have higher incomes at age 70 than the previous cohort. Overall median retirement income is projected to increase from \$29,500 for those age 45 to 54 in 2012 to \$32,900 for those age 35 to 44, and \$42,800 for those age 25 to 34.

### **How the Middle Class Will Fare in Retirement: Poverty Rates**

#### **Data Highlights**

- DYNASIM3 projects that the official poverty rate among middle-class workers when they retire at age 70 will be 3.4 percent, compared to 9.7 percent among current retirees.
- However, after taking MOOP costs into account, the poverty rate will remain virtually unchanged—16.8 percent among current retirees and 16.4 percent among middle-income workers when they retire.
- Medical expenses will have a profound effect on the poverty rates of low-income workers when they retire, increasing their poverty rate from 20.6 percent (before medical expenses are deducted) to 44.1 percent (after medical expenses are deducted).

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<sup>13</sup> The DYNASIM3 model captures the stock market crash, and assumes that it recovers to half of its precrash projected value by 2017. The model captures neither the housing market crash nor the housing market boom. DYNASIM3 implicitly assumes that future populations will behave the same way as past populations with regard to such choices as educational attainment, marriage partners, job types, and the decision to work. Thus, the interdependence of the outcomes from such choices, like education and earnings, will remain unchanged in the near future. As long as the Great Recession, or any other economic crisis, does not alter these relationships (for example, the relationship between education and earnings), then the projections used in DYNASIM3 will remain accurate.

**Table 6**  
**Median per Capita Household Income at Age 70 among Current and Future Retirees**  
**(2011 \$ thousands)**

		Income Group in 2012			
		Middle	Middle	Middle	All
<b>Age in 2012</b>		25–34	35–44	45–54	70
<b>Year Age 70</b>		2048–57	2038–47	2028–37	2012
<b>All</b>		42.8	32.9	29.5	28.8
<b>Gender: Marital Status</b>	Female: Married	42.2	32.9	29.5	29.5
	Female: Unmarried	41.6	30.8	28.6	23.0
	Male: Married	45.4	34.6	31.5	31.5
	Male: Unmarried	39.1	31.6	26.7	29.7
<b>Education</b>	High school dropout	25.9	20.8	18.3	13.1
	High school graduate	37.8	30.9	27.8	28.5
	College graduate	54.9	42.7	41.3	50.9
<b>Race/Ethnicity</b>	Non-Hispanic white	46.3	36.7	32.5	32.2
	Non-Hispanic black	31.8	24.8	22.4	16.3
	Hispanic	37.8	26.3	23.3	12.5
	Asian/Native American	40.6	32.8	30.9	21.8
<b>Lifetime Work Experience</b>	< 10 years	22.2	22.0	21.8	13.0
	10 to 34 years	26.9	22.8	21.4	18.3
	35 or more years	53.8	43.2	35.2	38.9
<b>Retirement Income Quintile</b>	Bottom	16.2	13.6	12.9	9.4
	Second	27.4	22.2	20.3	17.3
	Third	42.8	32.9	29.5	28.8
	Fourth	65.8	51.5	44.0	44.6
	Top	113.9	90.2	75.3	80.6

Source: DYNASIM3 microsimulation model.

Notes: Lifetime work experience is the number of years individuals had positive earnings from age 25 to age 70. Shared lifetime earnings is the average of the 35 highest years of wage-indexed shared earnings between ages 25 and 70, where shared earnings are half the total earnings of the couple in the years when married and individual earnings in years when not married. Quintiles are calculated within income group.

Poverty is an absolute concept because individuals are considered poor if they have family incomes below an absolute minimum level needed to meet very basic needs—the official poverty thresholds of the U.S. Census Bureau. In this study, we use two measures of poverty. The first compares household income relative to the federal poverty level (FPL) for adults age 65 and older. Like the Census Bureau, we include income from other household members in our measure of resources to gauge poverty more accurately. Because our income measure includes the annuitized value of 80 percent of retirement accounts, poverty rates reported in this study will be lower than the official poverty rates calculated by the Census Bureau.

The second poverty measure compares household income net of MOOP expenditures with the Census Bureau’s Supplemental Poverty Measure (SPM) threshold. The SPM threshold includes spending for a reference family of two adults and two children on food, clothing, shelter, and utilities and a modest adjustment for other needs, based on five-year average values from the Consumer Expenditure Survey. The thresholds vary by

size, composition of family units, and housing status (owner with mortgage, owner without mortgage, and renter), but with no differential for people over age 65.<sup>14</sup>

**Before Medical Costs**

**Current Retirees vs. Future Retirees**

DYNASIM3 projects that only 3.4 percent of today’s working-age middle-income adults will be “officially” poor at age 70 (table 7). In contrast, the model estimates that

**Table 7**  
**Poverty Rates at Age 70 among Current and Future Retirees**  
**(%)**

		Income Group in 2012						All
		Low	Middle	High	Middle			
Age in 2012		25–54	25–54	25–54	25–34	35–44	45–54	70
Year Age 70		2028–57	2028–57	2028–57	2048–57	2038–47	2028–37	2012
<b>Before MOOP</b>								
<b>All</b>		20.6	3.4	0.7	2.1	4.2	4.0	9.7
<b>Gender: Marital Status</b>	Female: Married	12.1	1.4	0.4	1.1	1.8	1.4	5.0
	Female: Unmarried	33.1	6.5	1.2	3.0	8.1	8.6	20.7
	Male: Married	11.9	1.8	0.4	1.3	2.2	1.9	4.7
	Male: Unmarried	30.5	6.5	1.7	4.5	7.9	7.1	13.0
<b>Education</b>	High school dropout	38.6	11.6	3.9	5.8	14.6	12.6	27.6
	High school graduate	17.4	3.4	1.0	2.6	4.0	3.6	7.5
	College graduate	7.9	1.0	0.3	0.6	1.3	1.4	2.4
<b>Race/Ethnicity</b>	Non-Hispanic white	12.4	1.6	0.5	1.1	1.8	1.9	5.2
	Non-Hispanic black	29.5	7.1	1.3	4.7	8.6	8.3	23.2
	Hispanic	29.8	8.8	1.8	4.2	10.4	12.7	35.6
	Asian/Native American	25.3	3.2	0.9	1.7	4.1	4.0	20.4
<b>After MOOP</b>								
<b>All</b>		44.1	16.4	4.4	15.4	17.7	16.4	16.8
<b>Gender: Marital Status</b>	Female: Married	35.7	12.4	3.2	12.9	13.2	11.3	9.6
	Female: Unmarried	55.3	22.8	7.1	19.6	24.8	24.2	31.1
	Male: Married	35.0	12.7	2.8	11.7	14.2	12.4	9.8
	Male: Unmarried	56.9	23.7	7.3	23.3	23.6	24.1	25.5
<b>Education</b>	High school dropout	62.1	32.8	10.9	28.5	35.8	32.8	43.4
	High school graduate	42.7	17.4	5.9	16.8	19.1	16.5	14.1
	College graduate	26.6	10.2	2.7	11.1	9.6	9.3	4.7
<b>Race/Ethnicity</b>	Non-Hispanic white	36.7	13.4	3.7	13.4	13.2	13.4	11.5
	Non-Hispanic black	55.4	26.1	8.7	24.7	29.3	24.8	36.0
	Hispanic	50.9	22.0	5.7	15.4	25.8	25.2	46.8
	Asian/Native American	47.3	18.4	5.7	16.4	19.8	19.3	25.7

Source: DYNASIM3 microsimulation model.

<sup>14</sup> DYNASIM3 projections do not differentiate between homeowners with and without mortgages. For this reason, we use an SPM threshold that does not account for housing status.



almost three times more (9.7 percent) of today's 69- to 71-year-olds are poor.<sup>15</sup> These findings reflect the effects of higher real earnings on retirement income, as well as the effects of poverty thresholds that increase with inflation instead of wage growth—and wages are projected to increase faster than inflation. For instance, in 2011, \$13,609 was the poverty threshold for married couples ages 65 or older and \$43,009 was the national average wage. By 2042, the gap between these amounts is projected to increase considerably—the poverty threshold will increase to \$30,726 (more than doubling), and the national average wage will increase to \$148,780 (more than tripling). Thus, the way the poverty thresholds are calculated (having them increase by prices instead of wages) will automatically cause fewer individuals to be in poverty in the future, although their relative well-being (compared to current retirees) may not be substantially improved.

### **Social and Demographic Characteristics**

Future poverty rates will be highest for unmarried adults, those without high school degrees, non-Hispanic blacks, and Hispanics, and lowest for married adults, college graduates, and non-Hispanics whites. When looking at middle-income workers, the youngest age group (25–34) has lower poverty rates than older cohorts of workers from comparable income categories. Poverty rates at age 70 are expected to be highest for low-income adults (20.7 percent) and lowest for high-income adults (0.7 percent).<sup>16</sup>

### **After Medical Costs**

Including MOOP costs in the poverty calculations underscores the fact that rising medical expenses will have a deleterious impact on the retirement well-being of future retirees if the projected increases in costs are not controlled. Deducting the cost of MOOP expenses from the income that individuals have available during retirement will more than double the poverty rates for future retirees. In addition, rising medical costs will essentially eliminate any progress in decreasing poverty among future retirees who had middle-class incomes during their working years.

Accounting for MOOP expenses for both groups, 16.4 percent of today's working-age middle-income adults would be poor in retirement—nearly the same as the percentage of current retirees who are poor (16.8 percent). Although the most economically advantaged will continue to have the lowest poverty rates when accounting for MOOP spending, their poverty rates are expected to increase the most. Only 1 percent of working-age middle-income college graduates are projected to be poor at age 70 when MOOP expenses are ignored, compared with 10.2 percent when MOOP expenses are taken into consideration.

Medical expenses will also have a profound effect on the poverty levels of current low-income workers in retirement. For example, when medical expenses are excluded,

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<sup>15</sup> Appendix table A3 compares DYNASIM3 estimates of poverty rates in 2012 with published statistics from Social Security Administration, *The Income of the Population 55 or Older, 2010*. The table shows that the different sources produce similar statistics.

<sup>16</sup> It is important to remember that individuals are categorized as low, middle, and high income as of 2012 and not at retirement. Thus, an individual can be considered high income in 2012 and through a loss of income can have income below the poverty threshold in retirement (at age 70).



20.7 percent of current low-income workers are projected to be in poverty in retirement (at age 70). However, this figure more than doubles to 44.1 percent when medical expenses are considered. After medical expenses are included, more than 62 percent of working-age low-income high school dropouts are projected to be in poverty at age 70. Policies designed to stem rising health care costs could have a profound effect on the well-being of future retirees and will be essential if poverty rates for current middle- and low-income workers are to improve in their retirement years.

### How the Middle Class Will Fare in Retirement: Replacement Rates

#### Data Highlights

- Future retirees are projected to be less likely than current retirees to maintain their preretirement living standards, based on their replacement rates.
- Current retirees will have enough retirement income to replace 80 percent of their preretirement earnings, but middle-income workers are expected to replace 73 percent of their preretirement earnings at age 70.
- The inclusion of MOOP spending significantly reduces the replacement rates, and much more for future retirees than current retirees.
- Medical expenses have an even larger negative effect on the replacement rate of low-income workers (at age 70).

The poverty rate measures the economic well-being of individuals by calculating their ability to maintain a level of consumption to meet very basic needs as measured by an *absolute* benchmark, the FPL. In contrast, income replacement rates are a *relative* measure of the extent to which individuals' retirement incomes replace their preretirement incomes.<sup>17</sup> The rationale is that the replacement rate measures a person's ability (as measured by the level of retirement income) to maintain the same level of consumption as while working (as measured by past earnings).

Unfortunately, there is no standard way of calculating replacement rates. Researchers use different measures of retirement income or different measures of past income (for example, retirement planners may use only the last year of earnings prior to retirement, while other researchers may use the last 5 or 10 years of earnings prior to retirement). This report defines the replacement rate as the ratio of per capita household retirement income at age 70 (using the inclusive measure of income described above) to past earnings (using the average highest 35 years of wage-indexed shared earnings between the ages of 25 and 70). We used the average of the highest 35 years of past earnings because it is similar to how Social Security calculates a Social Security benefit, and because it is a good measure of the average consumption that individuals could have maintained through their working years. We chose to wage-index those earnings because we believe that generations should not only maintain

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<sup>17</sup> Andrew G. Biggs and Glenn R. Springstead, "Alternate Measures of Replacement Rates for Social Security Benefits and Retirement Income," *Social Security Bulletin* 68(2) (2008): 1–19; Patrick Purcell, "Income Replacement Ratios in the Health and Retirement Study," *Social Security Bulletin* 72(3) (2012): 37–58; Eugene Steuerle, Christopher Spiro, and Adam Carasso, *Measuring Replacement Rates at Retirement*, Straight Talk on Social Security and Retirement Policy No. 24 (Washington, DC: Urban Institute, 2000).

their purchasing power through retirement (as measured by the growth in prices) but should also be able to maintain their standard of living (as measured by the growth in wages).

### **Before Medical Costs**

#### **Current Retirees vs. Future Retirees**

Despite retirement incomes that are projected to be higher and poverty rates that are projected to be lower than those of current retirees, future retirees are projected to be less likely than current retirees to maintain their preretirement living standards based on their replacement rates (table 8). Replacement rates are projected to decline between current and future retirees because retirement incomes are not projected to increase as much as preretirement earnings. Among today's working-age middle-income adults, for example, lifetime earnings are projected to be 30 percent higher than the lifetime earnings of current retirees; however, retirement incomes are projected to be only 20 percent higher than the retirement incomes of current retirees (see table 5). As a result, current retirees will have enough retirement income to replace 80 percent of their preretirement earnings, but working-age middle-income adults in 2012 are expected to be able to replace only 73 percent of their preretirement earnings.

#### **Demographic Characteristics**

Middle-income single workers will have greater median replacement rates than their married counterparts at retirement (age 70). Interestingly, there is no clear pattern by gender and marital status. Single women (middle-income workers) are projected to have greater replacement rates than single men. On the other hand, married women are projected to have lower replacement rates than married men. This is, in part, explained by the fact that single women have higher median incomes than single men (with the exception of the middle-age, 35- to 44-year-old, group). The opposite holds true for the married—married men have higher median retirement incomes than married women.

Individuals with more education are more likely to have multiple sources of retirement income and to have higher retirement incomes, which will increase their replacement rates. Median replacement rates will remain essentially unchanged for high school dropouts, increasing from 68 percent among current retirees to only 69 percent for future retirees. But for college graduates, the replacement rate will decline substantially, from 90 percent for current retirees to 79 percent for future retirees.

Similar to those with greater educational status, whites and Asians/Native Americans have higher median income and more sources of retirement income that will increase their replacement rates relative to other races. Middle-income non-Hispanic whites are projected to have a replacement rate of 75 percent. In comparison, Asians/Native Americans will have retirement incomes that can replace 76 percent of past earnings, Hispanics will have retirement incomes that can replace 70 percent of past earnings, and non-Hispanic blacks will have retirement incomes that are projected to replace only 63 percent of past earnings.

In general, replacement rates decrease with age. With few exceptions, the youngest middle-income workers (25–34) will have greater retirement replacement rates than 35- to 44-year-olds and 45- to 54-year-olds. Similar to prior results, the trend stems from the fact that younger cohorts tend to have higher median incomes than older cohorts, which will result in greater replacement rates.

**Table 8**  
**Median Income Replacement Rates at Age 70 among Current and Future Retirees**  
 (%)

		Income Group in 2012						All
		Low	Middle	High	Middle			
Age in 2012		25–54	25–54	25–54	25–34	35–44	45–54	70
Year Age 70		2028–57	2028–57	2028–57	2048–57	2038–47	2028–37	2012
<b>Before MOOP</b>								
<b>All</b>		79	73	75	75	73	70	80
<b>Gender:</b>	Female: Married	75	71	71	71	71	70	83
<b>Marital Status</b>	Female: Unmarried	91	78	87	86	76	75	85
	Male: Married	76	72	74	74	74	70	76
	Male: Unmarried	74	73	73	75	75	65	78
<b>Education</b>	High school dropout	85	69	63	66	67	72	68
	High school graduate	76	71	71	72	72	69	79
	College graduate	79	79	79	82	77	76	90
<b>Race/Ethnicity</b>	Non-Hispanic white	77	75	76	77	77	72	80
	Non-Hispanic black	72	63	65	67	64	59	70
	Hispanic	80	70	73	72	68	71	86
	Asian/Native American	95	76	76	76	76	75	100
<b>Lifetime Work Experience</b>	< 10 years	121	78	67	87	77	74	117
	10 to 34 years	73	64	59	62	64	65	73
	35 or more years	78	79	80	83	80	73	81
<b>Retirement Income Quintile</b>	Bottom	54	46	42	47	45	47	56
	Second	66	53	60	54	53	53	56
	Third	66	70	79	71	68	67	74
	Fourth	85	93	99	97	94	88	90
	Top	126	133	132	135	135	130	136
<b>After MOOP</b>								
<b>All</b>		50	55	64	55	54	56	70
<b>Gender:</b>	Female: Married	47	53	60	51	52	55	73
<b>Marital Status</b>	Female: Unmarried	60	58	74	61	56	58	74
	Male: Married	49	55	63	54	55	56	68
	Male: Unmarried	46	55	62	56	57	52	68
<b>Education</b>	High school dropout	52	48	50	45	47	51	57
	High school graduate	49	53	59	52	53	54	69
	College graduate	52	61	69	63	60	61	81
<b>Race/Ethnicity</b>	Non-Hispanic white	50	57	65	57	58	57	70
	Non-Hispanic black	45	46	54	47	45	45	59
	Hispanic	52	54	63	55	52	57	74
	Asian/Native American	58	56	64	54	54	61	87
<b>Lifetime Work Experience</b>	< 10 years	74	54	51	53	50	56	93
	10 to 34 years	44	44	46	40	43	48	61
	35 or more years	56	62	69	65	64	59	73
<b>Retirement Income Quintile</b>	Bottom	12	26	29	23	23	29	40
	Second	34	37	48	36	35	39	46
	Third	42	54	68	53	53	54	66
	Fourth	62	78	88	80	78	75	83
	Top	107	118	122	120	119	118	130

Source: DYNASIM3 microsimulation model.

Note: Quintiles are calculated within income and age group.

**After Medical Costs**

The inclusion of MOOP spending significantly reduces the replacement rates—much more for future retirees than current retirees. For current retirees, replacement rates decline from 80 percent (when medical costs are not considered) to 70 percent (after medical costs are considered), a relative decline of 12 percent. For middle-income workers, the replacement rate is projected to decline by 25 percent, from 73 percent to 55 percent, at age 70. Medical expenses have an even larger negative effect on the replacement rate of low-income workers. The replacement rate for low-income workers decreases from 79 percent to 50 percent, a relative decline of 37 percent after medical expenses are included. Increasing MOOP costs will significantly diminish the ability of all demographic groups to maintain their preretirement standards of living, reducing retirement well-being for all future retirees if the growth in costs is not slowed below currently projected levels.

**How the Middle Class Will Fare in Retirement: Keeping up with Future Middle-Class Standards of Living**

**Data Highlights**

- Even more than current retirees, future retirees are projected to fall further behind the living standards of the average workers of the future.
- The ratio of retirement income to the national average wage is projected to be 66 percent for current retirees, but only 52 percent for future retirees (when they turn 70).

**Table 9**  
**Distribution of Income Replacement Rates at Age 70 among Current and Future Retirees (%)**

	Income Group in 2012						
	Low	Middle	High	Middle			All
Age in 2012	25–54	25–54	25–54	25–34	35–44	45–54	70
Year Age 70	2028–57	2028–57	2028–57	2048–57	2038–47	2028–37	2012
<b>Before MOOP</b>							
All	100	100	100	100	100	100	100
< 50%	23	24	25	24	25	25	20
50%–<75%	24	28	25	27	27	29	25
75%–<100%	17	19	20	18	19	19	19
100%–<150%	17	20	20	21	20	18	20
150%–<200%	7	6	6	6	6	5	7
200%+	12	4	4	4	4	4	9
<b>After MOOP</b>							
All	100	100	100	100	100	100	100
< 50%	50	45	37	46	46	44	30
50%–<75%	16	21	23	19	20	22	24
75%–<100%	11	14	17	14	14	15	16
100%–<150%	10	13	16	14	13	13	17
150%–<200%	4	4	5	4	4	4	6
200%+	9	3	3	3	3	3	8

Source: DYNASIM3 microsimulation model.

- The ratio for current low-income workers tends to be approximately half that of current middle-income workers and only about a third that of high-income workers.
- Once again, medical costs have a huge impact on the ability to keep up with future middle-class standards of living, as this ratio declines from 59 percent among current retirees to 41 percent among future retirees once MOOP costs are taken into account.

Another way to assess retirement income adequacy is to consider whether future retirees will be able to keep up with the living standards of the average workers of the future. Similar to the replacement rate, this is a relative measure—but instead of comparing retirement income to past earnings, this ratio compares retirement income to the projected average national wage (table 10). The ratio of retirement income to the national average wage is an indicator of how well future retirees will keep up with the middle-class standards of living of the future.

### ***Before Medical Costs***

The median ratio of retirement income to the wages of workers will be 66 percent for current retirees, but only 52 percent for today's young middle-income adults—suggesting a decline over time in the relative well-being of future retirees compared with workers of the future. With few exceptions, this pattern holds across demographic characteristics and across cohorts. Because median retirement incomes are greater for younger middle-income workers than older middle-income workers, the ratio of median income to the average wage (at age 70) will also be greater. Thus, younger middle-income workers are projected to enjoy a higher standard of living during retirement than older workers.

One of the most disconcerting results is the low ratios for current low-income workers at age 70 (future retirees). The ratio for current low-income workers tends to be approximately half that of current middle-income workers and only about a third that of high-income workers. This suggests that policymakers should keep in mind that cutting resources important to low-income individuals, such as Social Security and Medicare, will further worsen the already deficient standard of living, during retirement, of low-income individuals.

### ***After Medical Costs***

Similar to prior results, including MOOP costs does not alter the patterns among various groups but significantly reduces the levels. Including medical costs decreases the ratio of retirement income to the average wage from 66 to 59 for current retirees. Without including medical costs, middle-income workers could expect their retirement income to equal a little over half of the average wage of workers in the year they turn 70. After medical costs are deducted, however, the retirement income of middle-income workers (at age 70) is only able to replace 41 percent of the average worker's wage in the same year.

Medical costs also further erode the standard of living of low-income workers in retirement. Excluding medical costs, low-income workers are projected to have median incomes, at age 70, that are about a quarter of the average wage of workers in the same year. When MOOP costs are taken into consideration, median retirement income is projected to be only 17 percent of the average wage of workers in the same year. Medical costs also hit those with least education hard. Low-income workers who did not finish

**Table 10**  
**Ratio of Median Income to the National Average Wage at Age 70**  
**among Current and Future Retirees**  
**(%)**

		Income Group in 2012						All
		Low	Middle	High	Middle			
Age in 2012		25–54	25–54	25–54	25–34	35–44	45–54	70
Year Age 70		2028–57	2028–57	2028–57	2048–57	2038–47	2028–37	2012
<b>Before MOOP</b>								
<b>All</b>		27	52	98	58	50	50	66
<b>Gender:</b>	Female: Married	29	52	93	57	50	50	68
<b>Marital Status</b>	Female: Unmarried	24	51	103	57	47	49	53
	Male: Married	31	55	100	61	53	53	72
	Male: Unmarried	23	49	100	53	48	46	68
<b>Education</b>	High school dropout	17	32	58	35	32	31	30
	High school graduate	28	48	81	51	47	47	65
	College graduate	46	70	121	75	64	70	116
<b>Race/Ethnicity</b>	Non-Hispanic white	33	58	104	63	55	55	74
	Non-Hispanic black	21	39	73	43	38	38	37
	Hispanic	21	43	85	51	40	40	29
	Asian/Native American	25	53	93	56	50	52	50
<b>Lifetime Work Experience</b>	< 10 years	14	33	53	31	33	37	30
	10 to 34 years	25	35	58	36	34	36	42
	35 or more years	44	66	113	73	65	59	89
<b>Retirement Income Quintile</b>	Bottom	9	21	37	22	21	22	22
	Second	18	35	65	37	34	34	40
	Third	27	52	98	58	50	50	66
	Fourth	44	80	147	89	78	74	102
	Top	89	140	260	153	137	128	184
<b>After MOOP</b>								
<b>All</b>		17	41	86	44	39	41	59
<b>Gender: Marital Status</b>	Female: Married	19	41	81	43	38	41	62
	Female: Unmarried	15	40	90	43	38	41	44
	Male: Married	21	43	88	46	40	42	65
	Male: Unmarried	15	38	88	41	38	37	60
<b>Education</b>	High school dropout	11	23	47	25	22	23	25
	High school graduate	18	38	70	38	36	38	58
	College graduate	33	58	107	60	52	61	109
<b>Race/Ethnicity</b>	Non-Hispanic white	22	45	91	47	44	45	67
	Non-Hispanic black	14	29	61	31	26	29	31
	Hispanic	14	34	74	41	31	33	24
	Asian/Native American	15	39	81	41	37	41	44
<b>Lifetime Work Experience</b>	< 10 years	9	24	42	19	24	30	23
	10 to 34 years	15	25	47	25	24	28	35
	35 or more years	33	54	100	58	54	50	83
<b>Retirement Income Quintile</b>	Bottom	2	12	27	11	11	14	17
	Second	10	26	54	26	24	27	33
	Third	18	42	87	45	39	41	59
	Fourth	34	69	135	75	67	66	95
	Top	77	128	247	140	126	117	178

Source: DYNASIM3 microsimulation model.

Note: Quintiles are calculated within income and age group.



high school are projected to have retirement incomes only about a tenth of the average wage at age 70, after medical costs are deducted.

The results show that current retirees enjoy a higher standard of living during retirement than middle-income workers, at age 70. In addition, those with higher retirement incomes (the younger, the better educated, non-Hispanic whites, and Asians/Native Americans) will enjoy higher standards of living than their counterparts. Finally, these results continue to underscore the necessity of controlling the growth in medical costs. Including medical costs reduces the standard of living for everyone and, in particular, low-income workers, who devote a larger share of their retirement incomes toward medical costs.

### How the Middle Class Will Fare in Retirement: Economic Mobility

#### *Data Highlights*

- Just over 40 percent of current middle-income workers are expected to remain middle income in retirement—with roughly equal shares moving up (29.6 percent) to upper income and moving down (30.1 percent) to lower income in retirement.
- Younger cohorts of middle-income workers (age 25–34 in 2012) are more likely to move up the economic ladder during retirement (39.2 percent) than older cohorts (age 45–54 in 2012), only 21.1 percent of whom are projected to move to upper income in retirement.
- Working at older ages contributes to moving up the economic ladder during retirement.

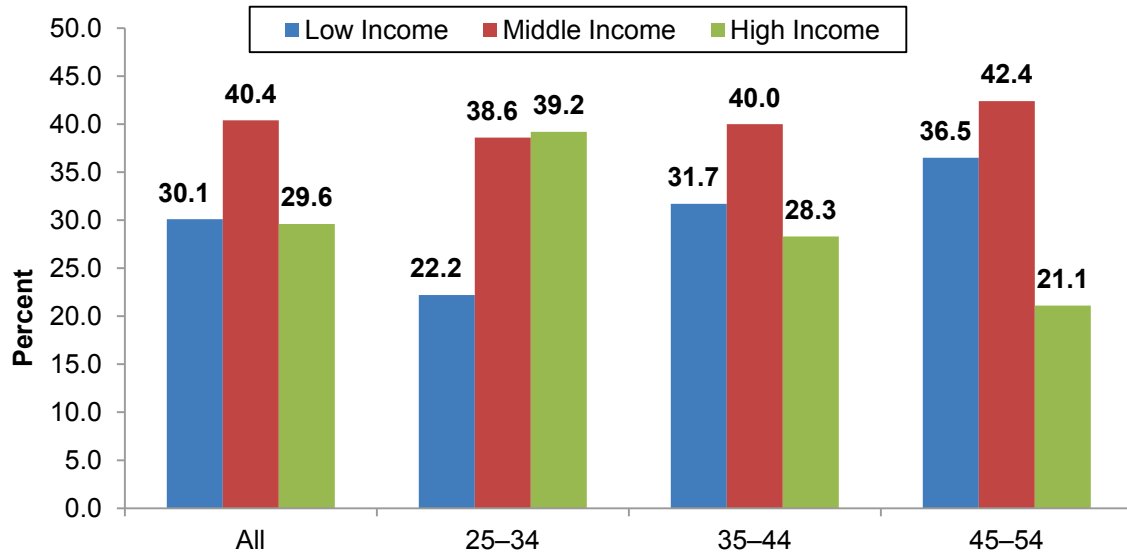
Another measure of well-being is the ability of individuals to move up the economic ladder (economic mobility) in retirement. Current middle-income workers who become high income in retirement are able to increase their per capita household incomes, improving their economic conditions. More than 40 percent of today’s working-age middle-income adults will remain middle income in retirement and are not expected to lose or gain economic ground (figure 5). Roughly equal shares will move up (29.6 percent) to upper income and move down (30.1 percent) to lower income in retirement. The oldest age cohorts (45- to 54-year-olds in 2012) are least likely to move up the income ladder (only 21.1 percent) and the most likely to move down in retirement (36.5 percent). Conversely, the youngest cohorts (25- to 34-year-olds in 2012) are most likely to move up (39.2 percent) and least likely to move down (22.2 percent).

One of the factors contributing to upward mobility is work at older ages (table 2). Among middle-income adults in 2012 who become high income at age 70, 64 percent are projected to be still working at age 70 and to have median earnings of \$18,200, or 23 percent of their total incomes.<sup>18</sup> In contrast, among those who remain middle income their entire lives, only 33 percent are expected to work at age 70 and to have median earnings of only \$3,800, or 11 percent of their total incomes. Adults with high incomes at age 70 are also more likely than those with middle incomes to have spouses who work

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<sup>18</sup> Although not directly comparable, the Social Security Administration estimates that almost 64 percent of “units” age 65 and older, in the highest income quintile, have earnings. Thus, this estimate (although projected for future retirees) does not greatly differ from current percentages.

**Figure 5**  
**Distribution of Household Income at Age 70 Among Middle Income Adults Age 25–54 in 2012 (Mobility)**



and whose earnings make a significant contribution to their household incomes. In fact, respondent and spouse earnings combined explain 50 percent of the difference in retirement incomes between those who remain middle income throughout their lives and those who reach the top rung of the economic ladder by age 70.

## CONCLUSIONS

While most analysts agree that rising inequality in the United States has meant that middle-class Americans have not benefited equally from the country’s economic prosperity, little discussion has focused on what these trends mean for their retirement security. This study uses the Urban Institute’s DYNASIM3 model to assess the retirement prospects of today’s working-age middle-class population. Overall, working-age middle-income adults in 2012 can expect to have modestly higher retirement incomes and lower old-age poverty rates than current retirees, but the rising costs of out-of-pocket health care spending are likely to significantly reduce these gains and largely eliminate any progress in reducing poverty among future retirees. While the most economically vulnerable populations today will continue to be the most economically vulnerable in the future, they are projected to gain the most over time—reducing educational and racial/ethnic gaps in retirement security.

Despite modest increases in income, today’s working-age middle-income adults are less likely than current retirees to have enough retirement income to maintain their preretirement standards of living. DYNASIM3 projects a retirement income replacement rate of only 73 percent for the typical middle-income adult, compared with 80 percent for the typical current retiree. When MOOP costs are considered, the replacement rate for middle-income workers is projected to plummet to 55 percent.



Furthermore, when young middle-income adults retire, their living standards are expected to lag behind those enjoyed by the average worker to a much larger degree than experienced by current retirees. DYNASIM3 projects that the ratio of income at age 70 to the national average wage will be only 52 percent for the typical middle-income adult, compared with 66 percent for the typical current retiree. Again, health care costs will reduce that ratio still further, to only 41 percent.

Working-age middle-income adults who are able to climb the economic ladder through good jobs that pay high wages and provide generous pensions are projected to have retirement incomes that are more than twice as high as those who remain middle income their entire lives. However, without better educational opportunities and more federal funding for training and workforce development programs that could prepare middle-class Americans for better jobs, DYNASIM3 projects that only 30 percent of today's working-age middle-income adults will be able to significantly improve their retirement prospects.

Typical middle-class Americans in 2012 are expected to rely on Social Security benefits for more than 50 percent of their incomes in retirement. For the 30 percent of middle-class Americans who are projected to end up with low incomes at age 70, Social Security is expected to account for more than 80 percent of their retirement income. Middle-class Americans' future dependence on Social Security is likely to be even greater, given the rising health care costs that will erode family's retirement incomes.

Policymakers working to improve the financial solvency of Social Security should consider options that protect Social Security benefits for those who depend on these benefits the most. Currently, Social Security benefits replace a larger share of career earnings for lower wage earners than for higher wage earners. Reform proposals that maintain these relatively high replacement rates for lower earners would preserve benefits for the most vulnerable. A new Social Security minimum benefit, enacted alone or as part of a larger reform package, also could protect low-income retirees.<sup>19</sup>

Beyond this, policymakers could take additional steps to strengthen the social safety net. One option would be to reform and strengthen the SSI program. DYNASIM3 projects that only 7 percent of today's working-age *low-income* adults will receive SSI at retirement. Increasing the asset limit (set in 1972) to reflect cost-of-living changes and boosting the maximum benefit to the poverty threshold would allow more retirees to qualify for SSI and raise their annual benefits. Expanding SSI would enable the program to fulfill its mission of protecting older and disabled adults from economic hardship.

Finally, controlling the projected rise in health care costs is one of the most important steps that policymakers could take to assure middle-class workers that their future retirement incomes will not be eroded by out-of-pocket expenditures. Whether measured by median income, poverty rates, replacement rates, or ratios of retirement income to wages, future retirees will be significantly worse off if health care costs continue to escalate. Proposals to shift those costs to retirees would only exacerbate this trend.

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<sup>19</sup> Melissa Favreault, Gordon B. T. Mermin, C. Eugene Steuerle, and Dan P. Murphy, *Minimum Benefits in Social Security Could Reduce Aged Poverty* (Washington, DC: Urban Institute, 2007).

## APPENDIX

This appendix provides additional information about the Urban Institute's Dynamic Simulation of Income Model, DYNASIM3, and how the model projects income and medical expenses. It describes our projections of health care expenditures, and of income from pensions, retirement accounts, and other assets.

### DYNASIM3

The projections in this study come from DYNASIM3 which starts with a self-weighting sample of 103,072 individuals from the 1990 to 1993 panels of the Survey of Income and Program Participation (SIPP). Through statistical analysis, DYNASIM3 ages this starting sample in yearly increments to 2085, using parameters estimated from longitudinal data sources. DYNASIM3 then projects demographic and economic changes annually from 1993 to 2085. The model integrates many important trends and group-level differences in life course processes, including birth, death, schooling, leaving home, first marriage, remarriage, divorce, disability, work, retirement, and earnings. It projects the major sources of income and wealth annually from age 15 until death, including earnings, Social Security benefits, benefits from employer-sponsored DB pensions, SSI, retirement accounts (defined contribution (DC) plans, Individual Retirement Accounts (IRAs), and Keoghs), other assets (savings, checking accounts, money market accounts, certificates of deposit (CDs), stocks, bonds, equity in businesses, vehicles, and nonhome real estate, less unsecured debt), imputed rental income, and income from coresiding household members. Although we focus on the income of the aged unit, coresident income is important for determining poverty. Finally, DYNASIM3 gets interest, dividends, rental income, and capital gains from a statistical match with the Internal Revenue Service Statistics of Income data.

DYNASIM3 projects the likelihood that an individual works each year and assigns hourly wages and annual hours of employment to those projected to work. Annual earnings are the product of the hourly wage and annual hours worked. Social Security income is computed based on the benefit formula, projected lifetime earnings, and an equation projecting benefit take-up. DYNASIM3 projects payments from employer-sponsored DB plans, cash balance (CB) plans, and retirement accounts based on equations of job change, retirement plan coverage and participation, and plan contributions. The model measures income from retirement accounts and financial assets each year as the real actuarially fair annuity payment that a household would receive if it annuitized 80 percent of its wealth.

Particularly important for this analysis, DYNASIM3 captures changes in the economy since 1993, including periods of expansion and contraction and the shift in employer retirement plans from DB pensions to DC plans. In addition, DYNASIM3 aligns its employment, earnings, inflation, fertility, disability, mortality, and net immigration projections with the 2012 Social Security trustees' intermediate-cost projections.<sup>20</sup>

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<sup>20</sup> DYNASIM3 assumes that prices increase 2.8 percent per year and that real wages increase 1.15 percent per year. The 2012 Social Security Trustees' intermediate assumptions assume that prices increase 2.8 percent per year and that real wage growth fluctuates from 1.09 to 1.19 percent per year between 2028 and 2057, when current adult workers turn age 70. DYNASIM3 slightly differs in that it assumes a constant future wage growth.

### Projecting Health Care Spending

For this study, we predict MOOP expenses using 2009 data from MEPS, a nationally representative survey of the civilian noninstitutionalized population in the United States. We use the Household Component, which collects data from families and individuals on their demographic characteristics, health status, use of medical services, charges and sources of payments, health insurance coverage, income, and employment. Panels 13 and 14 consist of five rounds of interviews, with rounds 3, 4, and 5 from Panel 13 and rounds 1, 2, and 3 from Panel 14 providing data for 2009.

We estimate the likelihood of having medical expenses (table A1) and the log of medical expenses (table A2) as a function of age, race and ethnicity, education, marital status, employment, health-related work limitations, Social Security benefit receipt, SSI receipt, and the log of per capita household income (including wages, business income, pension benefits, Social Security benefits, SSI benefits, and income from interest, dividends, trusts, and IRAs). We apply these coefficients to DYNASIM3 to project whether individuals have out-of-pocket medical expenses and the level of expenses for those who do.

### Projecting Pensions

DYNASIM3 projects pensions from employer-sponsored DB plans, CB plans, and retirement accounts. Starting information about pension coverage on current and past

**Table A1**  
**Logit Regression Results of the Likelihood of Having Out-of-Pocket Medical Expenses among Adults Age 55+, 2009**

	Male		Female	
	Coeff.	Robust Std. Error	Coeff.	Robust Std. Error
<b>Intercept</b>	1.5312***	0.2699	2.2236***	0.2412
<b>Age 65–69</b>	0.5295**	0.2502	0.2246	0.2724
<b>Age 70–74</b>	0.8241**	0.3477	0.1362	0.3055
<b>Age 75–79</b>	0.5283	0.3659	0.4107	0.3874
<b>Age 80 and older</b>	0.7255**	0.3192	0.5803*	0.3321
<b>Non-Hispanic black</b>	-0.6700***	0.2026	-0.8017***	0.2132
<b>Hispanic</b>	-0.8372***	0.2129	-1.0012***	0.2201
<b>High school dropout</b>	-0.5718***	0.2008	-0.0426	0.1990
<b>College graduate</b>	0.6258***	0.2381	0.3363	0.2734
<b>Divorced</b>	-1.0058***	0.2005	-0.3865	0.2743
<b>Single</b>	-0.7794***	0.2970	-0.5833	0.3578
<b>Widowed</b>	-0.3990	0.3026	-0.0063	0.2417
<b>Working</b>	-0.3825	0.2591	0.2299	0.3259
<b>Health limits work</b>	0.7407***	0.2768	0.7729**	0.3438
<b>Has Social Security</b>	-0.2115	0.2256	-0.0397	0.2659
<b>Has SSI</b>	-1.1052***	0.2994	0.0647	0.3364
<b>Log per capita household income</b>	0.1555***	0.0288	0.1030***	0.0308
<b>Pseudo R2</b>	0.1311		0.0599	
<b>Observations</b>	2,902		3,736	

Source: Authors' estimates using the 2009 Medical Expenditure Panel Survey

\*\*\* indicates p<.001; \*\* indicates p<.01; \* indicates p<.05

**Table A2**  
**OLS Regression Results of Out-of-Pocket Medical Expenses**  
**among Adults Age 55+ with Expenses, 2009**

	Male		Female	
	Coeff.	Std. Error	Coeff.	Std. Error
<b>Intercept</b>	6.0879***	0.1585	6.5263***	0.1314
<b>Age 65–69</b>	-0.3246***	0.0870	-0.3477***	0.0770
<b>Age 70–74</b>	-0.0733	0.1022	-0.3719***	0.0885
<b>Age 75–79</b>	-0.2593**	0.1129	-0.2627***	0.0931
<b>Age 80 and older</b>	0.0996	0.1110	-0.2490***	0.0905
<b>Non-Hispanic black</b>	-0.2763***	0.1050	-0.3429***	0.0825
<b>Hispanic</b>	-0.5671***	0.1127	-0.6804***	0.0961
<b>High school dropout</b>	-0.3766***	0.0810	-0.2549***	0.0662
<b>College graduate</b>	0.1339**	0.0608	0.2212***	0.0550
<b>Divorced</b>	-0.1152	0.0825	-0.1543**	0.0683
<b>Single</b>	-0.3093**	0.1293	-0.1974*	0.1177
<b>Widowed</b>	-0.0666	0.1117	-0.0271	0.0647
<b>Working</b>	0.1619**	0.0751	-0.0270	0.0642
<b>Health limits work</b>	0.1205	0.0858	0.1665**	0.0713
<b>Has Social Security</b>	-0.0571	0.0788	-0.1242*	0.0659
<b>Has SSI</b>	-0.9980***	0.1759	-1.3525***	0.1217
<b>Log per capita household income</b>	0.0964***	0.0153	0.0774***	0.0125
<b>Adjusted R2</b>	0.1055		0.1282	
<b>Observations</b>	2,623		3,531	

Source: Authors' estimates using the 2009 Medical Expenditure Panel Survey

\*\*\* indicates  $p < .001$ ; \*\* indicates  $p < .01$ ; \* indicates  $p < .05$

jobs, pension contribution rates, and account balances come from SIPP self-reported information. Projected DB pension information reflects pension plan structures through December 2008, including DB pension plan freezes and conversions to CB plans. Various data sources and models, as described below, are used to project job changes, pension coverage, pension participation, and pension contributions into the future.

DYNASIM3 projects DB pensions using the Pension Benefit Guaranty Corporation's Pension Insurance Modeling System (PIMS) DB plan formulas, which are randomly assigned to DB participants based on broad industry, union status, and firm size categories, and an indicator of whether the firm offers dual (DB and DC) coverage. DYNASIM3 uses actual benefit formulas to calculate benefits for federal government workers and military personnel, and uses tables of replacement rates from the Bureau of Labor Statistics to calculate replacement rates for state and local government workers. DYNASIM3 varies the probability of selecting a joint and survivor annuity by gender, education, health status, wealth, and expected pension income. It also varies DB cost-of-living adjustments by employment sector (i.e., private, federal, state, and local). The model projects conversions of pension plan type (from DB to CB or DB to DC) using actual plan change information for plans included in the PIMS data.

Most DB plan formulas assign DB pension income as a function of plan earnings and job tenure. Most private pensions require five years of employment before workers are

vested in the DB plan. Any shortening of job tenure directly reduces expected DB pension income.

### Projecting Retirement Accounts

DYNASIM3 starts with the self-reported SIPP retirement account balance. Because of documented deficiencies in the SIPP asset data,<sup>21</sup> asset balances in retirement accounts (as well as financial assets outside of retirement accounts) in DYNASIM3's starting SIPP sample are adjusted to align with asset distributions from the 2007 SCF. Individuals are also assigned an individual-specific risk tolerance based on SCF data. An individual's share of retirement account assets invested in equities varies by age and risk tolerance, with high-risk and younger individuals investing more in equities than low-risk and older individuals.

DYNASIM3 uses historical price changes and returns for stocks, long-term corporate bonds, and long-term government bonds through 2010 to grow portfolios. Investment experience varies for each individual because the model sets rates of return stochastically, using historical means and standard deviations. We account for the 2008 stock market crash, which reduced equity values by 37 percent, by assuming that the market recovers to half of its projected precrash value by 2017.<sup>22</sup> Specifically, DYNASIM3 assumes a 7.4 percent average real rate of return on stocks from 2009 to 2017 before resuming to its historic average real return of 6.5 percent. DYNASIM3 assumes mean real rates of return of 3.5 percent for corporate bonds, 3.0 percent for government bonds, and standard deviations of 17.28 percent for stocks and 2.14 percent for bonds.<sup>23</sup> The 6.5 percent real return on stocks reflects a capital appreciation of about 3.5 percent and a dividend yield of around 3.0 percent, in line with the long-term performance of the S&P 500. The model subtracts 1 percentage point from annual stock and bond returns to reflect administrative costs.

DYNASIM3 allows some workers to cash out retirement account balances with job changes or job losses. Younger workers, workers with lower account balances, and workers who lose their jobs are more likely to cash out retirement account balances than

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<sup>21</sup> John L. Czajka, Jonathan E. Jacobson, and Scott Cody, *Survey Estimates of Wealth: Comparative Analysis and Review of the Survey of Income and Program Participation* (Washington, DC: Social Security Administration, 2003), <http://www.ssa.gov/policy/docs/ssb/v65n1/v65n1p63.html>; Karen E. Smith, Melissa Favreault, and David Cashin, *Modeling Income in the Near Term 4* (Washington, DC: Urban Institute, 2005).

<sup>22</sup> Barbara A. Butrica, Karen E. Smith, and Eric J. Toder, "What the 2008 Stock Market Crash Means for Retirement Security," *Journal of Aging & Social Policy* 22(4) (2010): 339–59.

<sup>23</sup> The assumed rates of return are those recommended by the President's Commission to Strengthen Social Security, *Strengthening Social Security and Creating Personal Wealth for all Americans: Report of the President's Commission* (Washington, DC: President's Commission to Strengthen Social Security, 2001). The standard deviations are derived from real returns over the 55-year period between 1952 and 2007 for large company stocks and Treasury bills reported in Ibbotson Associates, *Stocks, Bonds, Bills, and Inflation (SBBBI) 2008 Yearbook: Market Results for 1926–2007* (Chicago, IL: Ibbotson Associates, 2008). Inflation assumptions follow the 2012 intermediate assumptions used by the Social Security Board of Trustees, *The 2012 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds* (Washington, DC: Board of Trustees, 2012).

are older workers, those with higher balances, and those who move seamlessly from one job to another. High unemployment contributes to lower lifetime DC pension savings through loss of contributions (and returns on lost contributions) when out of work and hardship withdrawals.

### Projecting Financial Assets

DYNASIM3 uses random-effects models developed for the Social Security Administration's MINT model to project financial assets. DYNASIM3 starts with SIPP self-reported assets (saving, checking, money market, CDs, stocks, bonds, equity in businesses, vehicles, and nonhome real estate, less unsecured debt). As with retirement accounts, we adjust the SIPP starting values to align with the household asset distribution from the 2007 SCF. Unlike retirement accounts that are directly invested in stock and bond portfolios, financial assets accumulate and decumulate as a function of household characteristics and earnings and projected wage differentials. The main economic explanatory variable is the individual's lifetime earnings relative to the cohort average. Individuals with above-average lifetime earnings accumulate assets faster than those with below-average lifetime earnings. A spell of unemployment will lower a worker's average compared with one who remained employed continuously. The longer the unemployment spell, the greater is the differential in lifetime earnings relative to the cohort average and the impact on projected assets. Assets accumulate at the household level, so husbands and wives share household assets equally. We assume that couples split assets at divorce and survivors inherit the assets of deceased spouses.

DYNASIM3 projects nonpension financial assets over three separate age ranges: up to age 50, from age 51 to retirement, and from retirement to death. Equations projecting assets to age 50 were estimated on the Panel Study of Income Dynamics.<sup>24</sup> Equations projecting assets from age 51 to retirement were estimated on the first seven waves of the Health and Retirement Study (HRS).<sup>25</sup> Equations projecting assets from retirement to death were estimated on a synthetic panel of SIPP data.<sup>26</sup> The latter two data sets included historic earnings from the Social Security Administration's Summary Earnings Record data.

### Asset Income

DYNASIM3 measures income from retirement accounts and financial assets each year as the real (price-indexed), actuarially fair annuity income a household would receive if it annuitized 80 percent of its total wealth. We use the calculated annuity value to assign only that year's income from retirement accounts and financial assets. The

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<sup>24</sup> Eric Toder, Larry Thompson, Melissa Favreault, Richard Johnson, Kevin Perese, Caroline Ratcliffe, Karen Smith, Cori Uccello, Timothy Waidmann, Jillian Berk, Romina Woldemariam, Gary Burtless, Claudia Sahm, and Douglas Wolf, *Modeling Income in the Near Term: Revised Projections of Retirement Income through 2020 for the 1931–1960 Birth Cohorts* (Washington, DC: Urban Institute, 2002).

<sup>25</sup> Karen E. Smith, Melissa M. Favreault, Caroline Ratcliffe, Barbara Butrica, Eric Toder, and Jon Bakija, *Modeling Income in the Near Term 5* (Washington, DC: Urban Institute, 2007).

<sup>26</sup> Eric Toder, Cori Uccello, John O'Hare, Melissa Favreault, Caroline Ratcliffe, Karen Smith, Gary Burtless, and Barry Bosworth, *Modeling Income in the Near Term—Projections of Retirement Income through 2020 for the 1931–1960 Birth Cohorts* (Washington, DC: Urban Institute, 1999).



**Table A3**  
**Comparison of DYNASIM 2012 estimates with Published Statistics**

		DYNASIM	SSA	
<b>Age</b>		69–71	65–69	70–74
<b>Year</b>		2012	2010	2010
<b>Median Per Capita Income (2011 \$)</b>	Female: Married	29.5	29.3	22.8
	Female: Unmarried	23.0	29.8	24.3
	Male: Married	31.5	32.9	26.6
	Male: Unmarried	29.7	29.7	24.3
<b>Poverty Rate (%)</b>		9.7	7.7	8.6

Source: DYNASIM3 microsimulation model and author's calculations of data reported in tables 3A.1 and 11.2 in *Income of the Population 55 or Older, 2010*.

annuity factor is recalculated each year to reflect changes in wealth as individuals age, based on DYNASIM3 projections of wealth accumulation and spend-down and changes in life expectancy and marital status as individuals survive to older ages. For married couples, DYNASIM3 assumes a 50 percent survivor annuity.

We measure income from financial wealth and retirement accounts as potential annuities to ensure comparability with DB pension and Social Security benefits, which are also annuities. Without this adjustment, DYNASIM3 would overstate the loss in retirement well-being from the shift from DB pension income to DC assets. A dollar in DB pension wealth produces more income by standard measures than a dollar in DC wealth because measured DB income counts both a return on accumulated assets and some return of principal, while measured income from financial wealth and DC retirement accounts includes only the return on accumulated assets.

