

Determining an Adequate Replacement Rate

The replacement rate of a pension benefit is defined as the proportion of post-retirement income over income in the final year worked. An adequate replacement rate is usually considered one in which a retiree receives a post-retirement benefit that supports the same standard of living the retiree had pre-retirement. Aon Consulting has developed a model for post-retirement income that adjusts for three factors that affect post-retirement income needs: 1) changes in tax payments, 2) changes in retirement savings, and 3) changes in consumption expenditures. Aon's study uses Consumer Expenditure Survey data to calculate changes in post-retirement consumption expenditures for a 65 year-old. For the purpose of this study, we use Aon's "best case" scenario for health care expenditures – they do not change after retirement. Retiree health insurance is not part of the Study Commission's charter.

Using Aon's calculations for the required replacement rates at various income levels, we have constructed a table that calculates the pension benefits replacement rate needed to supplement social security and maintain the retiree's pre-retirement standard of living. Our calculations are different than Aon's model in that our baseline case is for a single 65 year-old adult as opposed to a family situation in which Social Security family benefits are received. As the table shows, a retiree who received \$50,000 annually in pre-retirement income will need to replace 79% of that income post-retirement. Since the Social Security replacement rate at this income level is 36.7%, the retiree will need to replace an additional 42.3% of his or her income with pension or other benefits.

Replacement Rate Baseline Model -- 65-year old retiree, single

Annual Income	Social Security	Pension	Total Required (Aon Calculation)
20,000	50.2%	38.8%	89.00%
30,000	42.7%	43.3%	86.00%
40,000	39.0%	43.0%	82.00%
50,000	36.7%	42.3%	79.00%
60,000	33.7%	42.3%	76.00%
70,000	30.7%	45.3%	76.00%
80,000	28.5%	47.5%	76.00%
90,000	26.8%	50.2%	77.00%

The number of years over which an employee saves will greatly affect his or her needed savings rate, which is the annual employee and employer contribution as a percent of annual income. Consider an employee who joins the workforce at age 20 and needs to replace 42.3% of his or her income with pension benefits. If the employee saves only for the last 30 years of his career and we assume a pre-retirement investment return of 7% and annual salary increases of 5%¹, then he will need a savings rate of 17% to reach the desired replacement rate. For an employee who decides to save for all 45 years until the retirement age of 65, the savings rate need only be 10%. Contributions can be reduced if the employee saves over a greater period of time. These calculations are the same whether the employee or employer is making contributions and whether the plan type is defined benefit or defined contribution. A full table of these calculations is included in the readings for this meeting.

¹ See comments on assumptions in the replacement rate tables for this meeting.

While the Aon study and its methodology are commonly used, there is some debate about the proper use of replacement rates. We note in particular the following other viewpoints:

- Some retirees may in fact increase their spending in retirement because they now have more time for activities like golf and exotic vacations. The State may not feel the need to help employees prepare for such spending, although it can give employees the tools to prepare themselves.
- Hewitt Associates produces a study showing a need for higher replacement rates, in many cases exceeding 100% of pre-retirement income.² The primary reasons for their high figure are adjustments for inflation (which we treat separately in our analysis) and medical expenses.
- Retirement often roughly coincides with children leaving the home and/or finishing college. If a large portion of the family budget was spent on those children, spending in retirement may be much lower.³ Of course, this effect is limited if there are few children or they still live at home.
- The final rate of pre-retirement earnings may not correspond to the average level of spending near retirement. For example, the individual could have received a significant promotion in the final years of work or could have lost a job and taken another at a much lower salary.
- Housing is often a substantial asset for those nearing retirement.⁴ We have assumed above that this housing wealth would not be used to pay for other expenses in retirement. We have also not included in pre-retirement income the implied rent homeowners essentially pay themselves. Housing wealth can be accessed by downsizing or by taking a reverse mortgage, both of which have some drawbacks. Individual adjustments for housing can be made depending on whether or not mortgages will be paid off by retirement (which seems to be a less common practice these days) and depending on willingness to tap into housing wealth.
- Many retirees intend to simply cut back their spending if their resources are not adequate.⁵ This is probably an option for those at higher income levels, although it begs the question of why they couldn't cut back in their working years and save more for retirement. It may be less of an option for those at lower income levels.
- Many retirees intend to supplement their retirement income with part-time work.⁶ This is a valid approach, although retirees should understand that they may not be able to obtain part-time work and that they may only be physically or mentally able to do such work for a few years in retirement.

In addition, the Aon study focuses on the retirement income needed in the first year of retirement. It is also important to ask how that income need might change throughout retirement:

- In developing the required savings rates, we assume that inflation-adjusted spending will remain constant throughout retirement. Some studies show that consumption expenditures *continually* decline after retirement,⁷ especially as retirees move into the 75+ age cohort. It is not clear if that decline is voluntary as retirees become less active or involuntary as their resources become constrained.
- Inflation for the elderly seems to be slightly higher than inflation for the broader population. The Bureau of Labor Statistics has produced an experimental index called the CPI-E, which has increased at 3.3% per year in recent decades vs. 3.1% for CPI-U.⁸

² Hewitt Associates, *Total Retirement Income at Large Companies: The Real Deal 2008*

³ Sholz, John Karl and Ananth Seshadri, 2007, "Children and Household Wealth"

⁴ Munnell, Alicia and Mauricio Soto, 2005, "What Replacement Rates Do Households Actually Experience in Retirement?"

⁵ Employee Benefits Research Institute, *The 2009 Retirement Confidence Survey*

⁶ Ibid

⁷ Tacchino, K., & Saltzman, C. (1999). Do accumulation models overstate what's needed to retire? *Journal of Financial Planning*, 12 (2), 62–73.

⁸ <http://www.bls.gov/opub/mlr/2008/04/art2full.pdf>