

Income And Expenditures In Two Phases Of Retirement

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The replacement rate – the ratio of retirement income to pre-retirement income -- is a key part of retirement planning, yet common advice is not based on research. This article reviews previous empirical research and statements by financial planners, and presents an empirical analysis of consumer expenditure data. Expenditures in the first phase of retirement were 71% and in the second phase were 50% of pre-retirement income. These replacement rates should not necessarily represent a goal.

Key Words: *Financial planning, Retirement planning, Consumer expenditures, Replacement rates*

Financial planners are increasingly working with clients who question their income needs after retirement and the amount to save to maintain their standard of living. Identifying income needed after retirement, replacement income, inevitably involves making assumptions. This article examines the assumptions made in financial planning literature by financial planners and assumptions based on analyses of consumer expenditure surveys. A common guideline is that one should have in retirement an income equal to 70% of current salary (Clemens, 1994). However, the basis of such advice is not clear. The prevalence of advice on replacement ratios without basis was examined and compared to actual income and expenditures from consumer surveys.

Processes in retirement planning include assessment of current status by gathering data and developing financial statements, clarifying objectives in quantifiable dollar terms, and identifying procedures to meet the objectives. Increasingly over the last three decades, financial literature and financial planners have focused on how to provide for retirement income in today's financial environment (Bertot, 1986; Gourgues & Homrich, 1988; Wolf, 1991; Wyss, 1990; Van Caspel, 1978).

Literature Review

Conceptual Framework

The original lifecycle model (Modigliani & Ando, 1960) and the permanent income theory (Friedman, 1956) imply that a rational consumer will plan for constant spending over a lifetime. Based on those models, a replacement rate (post-retirement income divided by pre-retirement income) would be less than 100% only because of tax

considerations and reduced need to save out of post-retirement income. More recent versions of the lifecycle model (e.g., Hanna, Fan & Chang, 1995, p. 5) suggest that a consumer might rationally plan for reduced spending during retirement to allow for the reduced chance of being alive then. There is some evidence that consumers might plan for reduced consumption during retirement (e.g., Lee, Hanna, Mok & Wang, 1997).

Replacement Rates

Retirement income replacement ratios are “measures of the amount of retirement income needed to preserve a family unit's pre-retirement level of spendable income” (Retirement financial planning, 1994). Replacement ratios are used to assess income adequacy from pensions and the extent that pensions and Social Security replace pre-retirement earnings. Replacement rates can be calculated on hypothetical or actual earnings. Actual rates reflect the complexities of real life workers and differences among family types. Comparison across studies is difficult because of differences in the data and definitions, such as using highest earning, recent earnings, or a combination (Grad, 1990).

Using hypothetical replacement rates, middle-income workers were estimated to have needed two-thirds of previous income (Schulz, 1974). But a study of actual earnings revealed that only 6% to 8% of retired workers replaced two-thirds of their highest earnings (Grad, 1990). Most couples receiving Social Security and pensions in the early 1980s received below the amount necessary to maintain their pre-retirement level (Grad, 1990). The replacement rates in 1978, combining

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pension and Social Security, on the average were 42% for men and 48% for women. By quartiles of the couple's pre-retirement earnings, the replacement rate using pension and Social Security for the highest quartile was 65%, for the third quartile 67%, the second quartile 52%, and for the lowest quartile was 24% (Grad, 1990).

Other estimates of amount needed to maintain a level of living have been based on empirical analysis of workers (Munnell, 1982; Retirement financial planning, 1994). Munnell estimated the needed ratios were from 80% to 50% depending on levels of pre-retirement income. The average income replacement rates based on 30 years of service for medium and large firms combining private pension and Social Security payment 1988, by the worker's final year's earning are shown in the first column of Table 1.

Table 1
Replacement Rates Reported by Selected Research

Income	Replacement Rate (%)		
	EBPR, 1990*	Alexander, 1993**	Palmer, 1989***
15,000	78	82	82
20,000	71	76	
25,000	65		71
35,000	55		
40,000		71	68
45,000	50		
55,000	46		
60,000		72	66
80,000		76	68

*Employee Benefit Plan Review (EBPR), 1990

**Alexander and Alexander Consulting Group at Georgia State University, cited in Retirement financial planning, 1994.

***Palmer, 1989

Based on studies using data from the Consumer Expenditure Survey (Retirement financial planning, 1994), replacement ratios needed for the income levels of \$60,000 to \$80,000 have increased from earlier studies (Table 1). The higher replacement ratio results from "lower savings rates and only slight decreases in expenditures after retirement" and some increases in health care and food expenditures (Retirement financial planning, 1994). The lower replacement ratios compared

to earlier studies for lower income levels resulted from increased savings rates before retirement and decreased expenses after retirement.

Replacement rate estimates have assumed "that 100 percent of income replacement is not necessary because of differences after retirement in tax liabilities, work- and age-related expenditures, and use of savings for expenditures" (Schulz, 1974). Replacement rates are usually calculated based on final earnings, but some (e.g., Boskin, 1986) argue that the average of real earnings throughout the entire work career should be used. Many retirement planners and pension analysts reject this latter measure because the standard of living measure would be lower and the drop upon retirement would be too severe (Schulz, 1995). The last column of Table 1 shows the target replacement rate based on final earnings. Social Security payments alone for a couple in 1988 with gross retirement earnings of \$15,000 provided a replacement of 61%, 50% for earnings of \$25,000, 34% for earnings of \$40,000, 23% for earnings of \$60,000, and 17% for earnings of \$80,000 (Palmer, 1989).

The assessment of adequate replacement rates includes basis, distribution, and inflation effects (Schulz, 1995). A retiring worker with an average wage would receive from Social Security about 42% of earnings just prior to retirement and, if he had a non-working spouse, about 63%. In addition, a private pension could provide the one-worker couple with almost 90% to 100% of pre-retirement income. With the assumed estimated need of 60% to 70% of gross earnings, the question of over-pensioning some workers arises (Schulz, 1995). In actuality, these replacement rates are not available to the many workers who retire before 65 because of desire, poor health, or structural unemployment problems (Schulz, 1995). "Large numbers of workers are never covered, lose pension credits before retiring, or fail to meet vesting requirements" (Schulz, 1995, 140). In addition, inflation reduces the adequacy of private pensions in the years after retirement.

In 1992, 47% of workers received employer pensions (Grad, 1994). Most benefits were small, with 66% of women and 41% of men receiving less than \$3,000 per year (Schulz, 1995).

Methodology

For the purposes of this paper, three different sources of financial information were examined:

1. Content analysis of financial planning literature

commonly used in the educational preparation of financial planners and conveniently available to the researchers. A structured list of questions was used to examine the assumptions in the literature and reports were tabulated. Two researchers reviewed the pertinent sections of the literature so that agreement and minimum reliability were obtained.

2. Telephone survey of financial planners conducted in a Midwestern city in May, 1994. A convenience sample of 20 financial planners via telephone interviews were asked what recommendations they give to their clients regarding income needs during retirement and the basis for the recommendations. A structured set of questions were asked of the planners and their responses tabulated. Two researchers examined the responses independently to assure a minimum of reliability in tabulating the responses.
3. The 1991 Consumer Expenditure Survey which provided empirical data for analysis by age group. Pre- and post-retirement expenditures were compared by cross-section analysis.

Consumer Expenditure Survey Data

The Consumer Expenditure Interview Survey (CE) is the most comprehensive source of detailed information on family expenditures and income related to the socioeconomic and demographic characteristics of the U.S. population. The CE is conducted on a continual basis with rotating panels of approximately 5,000 families who are interviewed for five consecutive quarters (Paulin, 1995, 165).

The data used in the study are from the fourth quarter of the 1991 Consumer Expenditure Survey (CEX) data. There are 1,247 sampled households in the quarterly data. Those households with before-tax income of less than or equal to zero and households younger than age 55 are deleted from the sample (N=863). The remaining 384 households are used in the study. Annual income is obtained from annual data. Expenses are multiplied by four to obtain annual expense data.

The data were analyzed statistically for the purpose of this study of expenditures before and after retirement. Age groups, determined by age of the reference person, were compared, assuming those 65 and older were retired. In fact, 90% of those interviewed age 65 through 74 identified themselves as retired although some were still earning money and/or had family

members who were earners. Those households with negative balances, who had reported a negative income or no answer, were omitted from the analyses.

Statistical Procedure

Expenditures and after-tax-income by households in both groups - phases of retirement (ages 65-74 and ages 75 and over) were compared to pre-retirement households (ages 55-64) and calculated as means and percentages. Data were subjected to analysis of variance to test differences among means for the age groups and to verify the appropriateness of the grouping. Regressions were run for individual expenditure items as percentages of after-tax-income by households in four different age groups. The results are summarized but not reported in this article.^a

Results

Content Analysis of Financial Planning Literature

The assumptions made in financial planning literature on the income needed after retirement were examined and issues were identified. Content analysis of the literature revealed the following assumptions: Of the 17 books reviewed on financial planning, no book explicitly claimed that people desire to lower their level of living after retirement. Five books (Bertot, 1986; Gourgues & Homrich, 1988; Wolf, 1991; Wyss, 1990; Van Caspel, 1978) gave no mention of the issue. These five books focused exclusively upon investment options and vehicles that help contribute to retirement income. Two books (Leimberg & McFadden, 1993; Stillman, 1988) suggested that clients list all current expenses and then project retirement expenses, adjusting for inflation. The authors did not give any quantifiable guidelines on how to estimate future expenses.

Four of the 17 books reviewed discussed what areas of expenditure after retirement increase and which categories of expenditure decrease (AARP Staff, 1988; Breitbard & Carpenter, 1988; Hallman & Rosenbloom, 1987; Porter, 1975). Six books (Allen, Melone, Rosenbloom, & Van Derhei, 1992; Breitbard & Carpenter, 1988; Hallman & Rosenbloom, 1987; Lang, 1993; Pond, 1986; Porter, 1975) recommended a specific percentage of pre-retirement income needed after retirement. The arbitrary assumptions given in the literature ranged from 50-90%. Neither the basis of their assumptions nor research supporting them was cited. Each of the six books gave slightly different reasons upon which the percentage figures were based. These books agreed that the income needed after retirement is

lower because expenses are less. Following were some of the basis of these assumptions:

1. The house mortgage is completely paid (Breitbard & Carpenter, 1988; Hallman & Rosenbloom, 1987; Lang, 1993; Porter, 1975).
2. There are no more work-related expenses (Breitbard & Carpenter, 1988; Lang, 1993; Pond, 1986; Porter, 1975).
3. There is no more need for savings set aside for retirement (Pond, 1986).
4. There are no more dependent children (Hallman & Rosenbloom, 1987; Porter, 1975).
5. There is less insurance protection needed (the authors did not specify what kind of insurance), or insurance is paid (Breitbard & Carpenter, 1988; Pond, 1986; Porter, 1975).
6. The higher the income earned in working years, the lower percentage of pre-retirement income needed during the retirement years; the lower the pre-retirement income and the higher the percentage of pre-retirement income needed during retirement (Lang, 1993; Rosenbloom & Hall, 1991).
7. If retirees move to a smaller and warmer place to live, heating expenses are lower (Porter, 1975). Food expenses are lower because fewer calories are needed for older people (Porter, 1975). Retirees qualify for Medicare benefits (Porter, 1975).
8. There are additional discounts including more standard deductions allowed on tax returns upon reaching age 65 (Hallman & Rosenbloom, 1987; Pond, 1975), discounts on entertainment, and discounts on meals and groceries available to senior citizens (Pond, 1975).
9. Most expenses decrease during retirement. However, medical costs increase during retirement, as do travel costs (Breitbard & Carpenter, 1988; Porter, 1975).

In three retirement planning cases discussed in a case book issued by the College of Financial Planning (1994), the assumption of income needed after retirement made in each case was based on a thorough analysis of the individual client's current budget and the projected retirement budget. As a result of these analyses, the amount of after-tax-income included in retirement plans in the case book varied from 58% to 83% of pre-retirement income. The cases in CFP Parts IV-VI of the Case Examination Handbook do not clarify the exact procedures a financial planner used to make such future estimations.

Telephone Survey of Financial Planners

Analysis revealed the assumptions made by professional financial planning practitioners about the income needed after retirement and the basis of their assumptions. Assumptions identified through content analysis of telephone surveys with financial planners, all Certified Financial Planners, were the following:

1. Ten of the 11 Certified Financial Planners who were surveyed reported that their clients desire to maintain the same standard of living after retirement.
2. Three of the 11 financial planners suggested that the lower the income level during working years, the higher percentage of pre-retirement income needed during retirement.
3. Seven financial planners identified that the financial industry standard is at least 75-90% of pre-retirement income needed during retirement to maintain the pre-retirement level of living.
4. All 11 financial planners said that how they determine what proportion of pre-retirement income a client needs after retirement is somewhat or completely dependent on how the client wants to live in retirement. Planners have to work with the client's budget and changes throughout life stages. The actual figures that financial planners set for income needed after retirement ranged from 25% to 100% of pre-retirement income. The 75% to 90% industry guideline was almost never used by the financial planners surveyed.
5. Many variables influence the assumption used for income needed after retirement. It is such a complex decision that the planners would frequently allow the client to decide the desired replacement rate based on a hunch or preference. Some of the criteria were:
 - a. If the house is mortgage-free and there are no work-related expenses, a client will need much less income to cover expenses during retirement
 - b. A higher percentage of pre-retirement income is needed if a client desires to travel extensively after retirement. These criteria were based on informal observation rather than research on replacement ratios.

Empirical Surveys

The effect of retirement on actual consumption patterns reported is revealed in analysis of data from the Consumer Expenditure Survey (Table 2). Except for health care, expenditures in all categories decreased. Retirement age households had large decreases in expenditures on transportation, entertainment, and apparel. Except for health care, expenditures in all

categories decreased in absolute dollars compared to pre-retirement households (age 55-64). Moreover, the data showed that the decrease in expenditures (in all categories, except health care) began with pre-retirement households (age 55-54) as compared to households age 45-54.

Analysis of the 1991 Consumer Expenditure Surveys (Table 2) revealed not only the simultaneous decline in after-tax-income and aggregate expenditures upon retirement at age 65, but also, the sharp contrast in after-tax-income and expenditures of the younger and older retired households - Phase I (65-74) and Phase II (75 and over). In 1991, Phase I income was 59% of pre-retirement income. In Phase II, after-tax-income was 42% of pre-retirement income. The mean expenditures were significantly different between age categories based on analysis of variance tests for each expenditure category.

Total expenditure after retirement for households in Phase I was 71% of that of the 55 to 64 age group that were presumably still in the work force. Mean expenditure for Phase II was 50% of the pre-retirement level. Each age group age 55 and over had a positive mean surplus (after-tax-income minus expenditure). The category for insurance and pension decreased by the largest percentage, which is not surprising, since the category includes the pension contributions and most of the FICA tax, which is only imposed on earned income. The mean level for the insurance and pension category for Phase I (65-74) was 30% of the level for pre-retirement households (55-64) and only 8% of the pre-retirement level for Phase II (75 and over).

The expenditure category with the second biggest decrease in percentage terms was entertainment. Phase I expenditures were 49% and Phase II expenditures were 26% of the pre-retirement levels. The mean level for transportation expenditure in Phase I was 71%, and in Phase II, was 32%, of the pre-retirement level. It is possible that retirees did more traveling in Phase I, and also replaced vehicles less frequently in Phase II compared to Phase I.

Food expenditure also decreased upon retirement at age 65. In Phase I, households spent 82%, and in Phase II, 61% of the pre-retirement level. Housing was the largest portion of expenditures for households in all age groups. The absolute level of spending on housing was lower in retirement than the level for age 55-64, which in turn was

lower than the level for age 45-54. However, households in the two phases of retirement spent a larger share of their budgets on housing even though 60% of those age 65 and over were mortgage free (*Long term care*, 1992). The sharp decrease in income accounted for the larger percentage spent on housing. Most people (80%) choose to remain in their homes. Only five percent moved to a new location either in retirement or in preparation for retirement (AARP Staff, 1988). It appears that even though mortgages are typically paid off by retirement, taxes, repairs, and utility payments keep housing a large portion of the budget.

Table 2
Post-retirement Household Mean Annual Expenditures and Income and Percent of Pre-retirement Level

Items	Mean Exp. Age 55-64	55-64 % of 45-54	Phase I (65-74) % of 55-64	Phase II (75 & over) % of 55-64
Expenditures	31,945	84	71	50
Income-after-taxes	38,285	79	59	42
Food	4,217	81	82	61
Alcoholic Bev.	260	72	83	31
Housing	9,457	84	72	62
Apparel	1,622	72	78	39
Transportation	5,525	82	71	32
Health	1,846	107	125	120
Entertainment	1,718	86	49	26
Reading	198	100	83	58
Miscellaneous	3,639	87	69	51
Insurance & Pension	3,462	80	30	8
Surplus	\$6,340		\$159	\$465

Miscellaneous includes personal care, education, contribution and other expenditures.

All percentages are rounded.

Analysis of Variance tests (DF =3, 3890) indicated that there were significant differences in mean expenditures between age groups for all categories at the 5% level or better.

Factors Explaining Expenditures

Regressions of household expenditures in categories were run on demographic variables.^b Household size, and age were significant in half or more of the regression analyses. Income was significant in all expenditure regressions. Household size was significant for transportation, housing, food at home, personal expenditures, and pensions (negatively). Being in the 75 and over age group had a negative effect for

transportation, food away from home, apparel/clothing, and the pension/insurance category. Being in the 65-74 age group had a negative effect for transportation, food away from home, apparel/clothing and life insurance. The number of earners had a negative effect on food away from home and education and a positive effect on the pension/insurance category.

Conclusions

The uncertainty of a specific figure for a replacement ratio or need for retirement income has been due to limited research, the varying definitions and methods used, and the diversity in needs of consumers. Financial planners can choose a figure that is inherently arbitrary but necessary to proceed to the next steps of retirement planning - selecting investment vehicles and making adjustments to provide for retirement. The results of this research can support informed decision-making in estimating the income replacement to maintain one's unique level of living based on averages in consumer surveys.

Expenditures declined in all categories except health care upon reaching age 65. However, this reflects the need of expenditures to decrease in response to the sharp decline in after-tax-income and in household size. Households age 55 and over increased or decreased their expenditures in response to the rise or fall in after-tax-income, but not in the same proportions as adjustment in expenditures. Income in the first phase of retirement in 1991 was 59% of pre-retirement income and in the second phase was 42% of pre-retirement income, whereas expenditures were 71% and 50%, respectively. The changes in expenditures as a percentage of pre-retirement expenditures are not necessarily an adequate replacement rate or a desired adjustment.

As a household advances into retirement years, decision on housing expenditure remains to be a critical factor in household's budget. Households in both phases of retirement, age 65-74 and age 75 and over, decreased expenditures in nearly every category (insurance and pension, entertainment, alcoholic beverages and transportation) by a larger percentage than they did on housing. Housing expenditure is the area that households are either unwilling or unable to make significant reductions. Non-mortgage fixed items in housing may have increased in the retirement years.

All the reasons given to explain the decline in household expenditures (i.e., mortgage is paid, no more dependent children, etc.) summarized in the beginning of this paper

have more to do with life stages than the event of retirement per se. Although people have expressed an increased desire to travel and to consume more entertainment in retirement years, this is not reflected in the Consumer Expenditure Survey. The media's and peer's portrayal of a dream retirement have lifted expectations of life in retirement. These expectations are more fulfilled in the first, more active phase of retirement, as shown by the decreasing expenditures in Consumer Expenditure Surveys for the second phase. If consumers do not want to follow the averages from analysis of survey data, they can save to maintain or change their life style, but in saving, consumption is lowered in pre-retirement years.

Implications for Financial Planners

The expertise of financial planners includes estimating replacement income and change in expenditures. Retirement income questions are gaining in importance as evidenced by the decline in number of men ages 55 to 64 who were in the work force between 1970, when 83 percent of this age group were working or looking for work, and 1991, when 67% were working or looking for work (Schwenk, 1994).

Retirement planning usually considers retirement as a static period of life, with a constant flow of income needed. In reality, judging from the severe decline in after-tax-income and expenditures in the different phases of retirement, households not only have to make an adjustment going into retirement, but also have to do so continuously during retirement, especially, upon reaching age 75 and over. Data analysis of both Consumer Expenditure Surveys of 1986 and 1991 showed sharp contrasts in after-tax-income and expenditures between pre-retirement age group and post-retirement age groups. The contrast was even more startling between the two phases of retirement - ages 65-74 and 75 and over.

Understanding consumption behavior as revealed by consumer expenditures in this study can assist in making recommendations based on research. Leaving the issue of replacement income completely to clients who have the natural human tendency to delay planning and who usually underestimate their expenses result in their falling short of their retirement dreams. The information from this study can improve decisions of clients more than using their hunches or preferences. It can provide a fear tactic to motivate clients to save. Information from this study documents the importance of saving for retirement to maintain a previous level of living. Analysis of expenditures in the younger age groups indicate they

have the capacity to save.

Estimating income replacement rate after retirement is complicated, as the planners (11 out of 11) indicated in the telephone survey. The trend toward early retirement and increased longevity indicate that an individual might spend 30 or more years in retirement and, therefore, has several periods of adjustment. The contrast between households' expenditures during the two phases of retirement implies that post-retirement counseling seems to be as urgent and important as pre-retirement counseling.

Future research can determine how financial planners can better assist clients to make adjustments in expenditures when their retirement income does not meet their standards. Another area of research involves determining the factors influencing the amount saved for retirement.

Implications for Consumers

Since life expectancies at age 65 for females and males was additional 18.9 years and 14.7 years, respectively (Person & Pollock, 1993), most people can expect to live through both phases of retirement. The sharp contrast in reduction of after-tax-income upon retirement at age 65 was followed by another severe reduction upon reaching later retirement at age 75 and over. The scant balance (after-tax-income minus expenditure) or negative balance indicates that households age 65-74 and age 75 and over, on the average, have not been able to accumulate enough savings or are using their savings to cover expenditures. Although this might not necessarily be an indication of decline in level of living, it at least shows that adjustments in reconciling expenditures and income are needed continuously after retirement. Attitudes toward what is adequate or desired may have to be adjusted in order to reconcile expenditures with income.

Future Research

Issues and questions deserve future research. What caused another steep decline in after-tax-income upon reaching the later retirement years of age 75 and over? What was the effect of inflation? What was precisely the effect of a spouse's death upon retirement and 10 years later? Was there a lower return from shifting savings to more conservative investment vehicles? Did Social Security or pension keep up with inflation? Are households forced to decrease expenditures in order to reconcile with the sharp decline in after-tax-income or was there a less need anyway? What factors contribute

to the decrease in specific expenditures relative to the decrease in income? At what level of replacement rates compared to actual decline would consumers perceive their income as adequate? How do values and financial management practices influence the decreases and perceived adequacy relative to change in income?

Endnotes

- a. *For categories in which most households had expenditures, Ordinary Least Squares (OLS) regression analysis was employed to determine factors contributing to variations in expenditures. The appropriateness of OLS regression can be judged (Greene, 1981) based on the percentage of households who reported zero category: 10% for transportation, 1% for food at home, 10% for food away from home, 10% for apparel/clothing, 10% for entertainment, 90% for education, 95% for vehicle purchase, 5% for health, 10% for personal care, 25% for reading, 50% for life insurance, and 50% for retirement pension. Households with reference persons of age less than 55 years old were deleted. Regression analysis provided an assessment of the independent effects of age group when holding other variables constant - household size, homeownership, number of earners, and residence. No variance of inflation (VIF) value exceeded 10 in the model, and therefore, multicollinearity did not appear to bias the regression results (Neter, Wasserman & Kutner, 1985).*
- b. *The variables selected for regression analysis explained the variation in expenditures from 2% to 50% (table available from the first author). Although the models were highly significant, their low R² levels indicate that other factors in respondents' lives than those selected for the model account for variation in expenditure levels.*

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