

When Will the Gender Gap in Retirement Income Narrow?

August 2003

Abstract

Among recent retirees, women receive substantially less retirement income from Social Security and private pensions than men. Increases in women's labor market attachment and earnings relative to men over the past 50 years provide some optimism for an improvement in female retirement income, particularly for married women. This study shows that women's income from Social Security and private pensions has improved only slightly relative to men over the past 25 years. Using data on people approaching retirement age over the next 20 years, prospects for future improvement are investigated. One of the main conclusions is that pension income among women (particularly married women) will rise sharply relative to men's over the next few decades, but a substantial gap could remain even if women close the gap in experience and salaries.

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1. Introduction.

The real incomes of elderly women are substantially below that of elderly men. Among people aged 65 and over in 1994, median income was \$15,250 for men and \$8,950 for women.¹ Moreover, the gender gap in median incomes of people aged 65 and over has been stagnant over the past 50 years. The female-male ratio of median incomes in the population aged 65 and over was .61 in 1950 and fell only slightly to .59 by 1994.

There are several important reasons that income among the elderly is lower for women than men. First, on average, women accumulate less work experience and have lower earnings than men. Second, among employed people, women are less likely to be covered by a pension plan than men. The combination of less work experience, lower earnings, and lower pension coverage among women contributes to less retirement income from Social Security and private pensions.

Over the past 50 years, the labor market behavior of women has undergone dramatic change that should contribute to a reduction in the gender gap in income among the elderly. Compared to 50 years ago, there has been a diminution of gender differences in labor force participation rates, experience, and earnings. Gender differences in pension coverage rates also narrowed. Nevertheless, gender differences in income among the elderly persist at levels comparable to those of 50 years ago.

This study investigates several dimensions of the gender gap in income among the elderly and examines the prospects for a narrowing of the gap in the near future. Section 2 shows that the gender gap in Social Security and private pension income among retirees fell only slightly

¹ Employee Benefits Research Institute (1997), table 6.1.

over the past 25 years. Explanations for the persistence of this gap are discussed. While the gender gap in pension income changed little over the past 25 years, section 3 shows that women's pension coverage in the working age population improved substantially relative to men's over the same period. Projections of the resulting improvements in women's pension income relative to men are illustrated in section 4. The underlying causes of the remaining gender gap in pension coverage and benefits are investigated in section 5. The analysis suggests that if women continue to close the gender gap in labor market experience, virtually all of the gap in coverage will disappear. However, among workers with pensions, there may be little improvement in women's pension income relative to men's.

2. Historical Evidence on Sex Differences in Retirement Income

Over the past 50 years, sex differences in women's labor force participation rates and earnings diminished substantially. Between 1950 and 1999, the labor force participation rate among men fell from 86 to 75 percent while it rose from 34 to 60 percent among women.² Among full-time workers, women's median annual earnings as a percentage of men's rose from 64 percent in 1951 to 73 percent in 1998.³ Despite these improvement in women's earnings and labor force attachment, the female-male ratio of income among people aged 65 and over has stagnated.

Among married retirees, the division of income from joint assets may mask the effect of women's labor market behavior on sources of retirement income. For example, if married women's earnings increase and their contributions to a joint savings account rise, their share of

² Statistics provided by the U.S. Bureau of Labor Statistics web site (<http://www.bls.gov>).

³ *Current Population Reports, Series P-60*, selected issues, U.S. Bureau of Labor Statistics.

the income from the joint account could remain unchanged. This section examines whether women's improved labor market attachment has helped close the gap in two sources of retirement income that are most directly related to a worker's own earnings history -- Social Security and private pension income.

A. Social Security.

Increased earnings and years of experience among women will eventually translate into higher Social Security benefits. However, as noted by Levine, Mitchell and Phillips (2000), the structure of the Social Security system could lead to minimal increases in women's benefits. There are two primary reasons for this. First, to be fully insured for Social Security, a person must have a minimum of 40 quarters of covered employment. Thus, increases in labor force attachment that are insufficient to raise women above the 40 quarter minimum will have no effect on Social Security benefits. Second, the fact that married women are entitled to spousal benefits can lead to a situation where additional years of Social Security earnings have no effect on the Social Security benefit. The reasoning behind this latter point requires some explanation of how Social Security benefits are calculated.

Calculation of the monthly Social Security benefit for a fully insured worker requires evaluation of the worker's average indexed monthly earnings (AIME). AIME is the average of the 35 highest years of indexed earnings subjected to Social Security taxes. The monthly benefit that a worker would receive at the normal retirement age is referred to as the primary insurance amount (PIA). It is calculated by applying a progressive replacement rate formula to AIME.⁴ A married woman is entitled to the greater of her own PIA or a spousal

⁴ As of August 2003, for a retirement at age 65, the monthly benefit is calculated as 90% of the first \$606 of AIME,

benefit that equals one-half of her husband's PIA. If a married woman and her husband are both fully insured, she is "dually entitled" and she receives the greater of her own benefit and the spousal benefit.⁵ Given the nature of spousal benefits, any fully insured woman whose PIA is less than one-half of her spouse's will receive a benefit based upon her spouse's PIA. Any increase in her earnings history insufficient to raise her own PIA above one-half of her spouse has no impact on her Social Security benefit. In fact, Levine, Mitchell and Phillips (2000) show that approximately one-third of married women approaching retirement in the 1990s faced this scenario.⁶

Amendments to the Social Security benefit formula passed in the 1970s may have contributed to the lack of improvement in women's benefits. With passage of the amendments, between 1971 and 1994, the number of years of earnings used to calculate AIME gradually increased from 15 to 35.⁷ Increasing the number of years of earnings used in the formula would reduce women's AIME (and therefore, their PIA) relative to men's if women have fewer years of social security earnings.

To provide some evidence on trends in Social Security benefits, table 1 presents data provided by the Social Security Administration on the average retirement and spousal benefits awarded to men and women between 1980 and 2000.⁸ In this data, any woman who is "dually entitled" to a retirement benefit (based on her own earnings history) and a spousal benefit is counted as receiving a retirement benefit, not a spousal benefit. The only women who are

plus 32% of the AIME between \$606 and \$3,653, plus 15% of AIME above \$3,653. There are reductions in the PIA for retirements prior to age 65 and increments for retirements beyond age 65.

⁵ The spousal benefit is also available to men if the wife has a higher PIA.

⁶ Levine, Mitchell and Phillips (2000) show that 70 percent of married women in the Health and Retirement Survey have sufficient quarters of coverage to be fully insured. For married women that were fully insured, one-third are entitled to higher spousal benefits than retirement benefits based on their own earnings history.

⁷ Myers (1993, p.70) describes the changes.

⁸ This data is provided by the Office of the Actuary of the Social Security Administration. It is available through their web site at <http://www.ssa.gov/OACT/ProgData/benefits.html>.

counted as receiving a spousal benefit are those awarded a spousal benefit but unqualified for Social Security based on their own earnings history. The value of the retirement benefit includes any amount due to a woman's own earnings history as well as any supplement that is necessary to raise her total benefit to the level of her spousal benefit.⁹

Despite substantial increases in women's labor market attachment, among those eligible for Social Security, average benefits among women remained stagnant relative to men's . Although there was modest variation in the ratio over the 20 year period, the female-male retirement benefit ratio started at .65 in 1980 and remained at .65 in 2000.

While there has been little improvement in women's Social Security benefits relative to men's over the past 20 years, separate data reveals that the share of women with a sufficient earnings history to qualify for Social Security has grown. Among women aged 62 or older, the percentage entitled to Social Security benefits as a worker grew from 56.9 to 64.9 between 1980 and 1999.¹⁰

Overall, the evidence suggests that women's Social Security benefits have been stagnant relative to men's over the past 20 years despite the fact that their labor force participation rates and earnings improved. The structure of the benefit formula is one plausible explanation for the lack of improvement in women's benefits. Another possible explanation is that, as more women have become eligible for Social Security benefits, the incremental women may have less years of experience or lower earnings. This would contribute to a reduction in the average benefit of the women who are eligible for Social Security.

B. Private Pensions.

⁹ For example, if a woman is entitled to \$300 monthly benefit based on her own earnings history but a \$400 per monthly spousal benefit, she is counted as receiving a retirement benefit of \$400 per month.

¹⁰ *Social Security Bulletin* (2000), Table 5.A.14.

To examine trends in private pension income over the past 25 years, we use data from the March Current Population Surveys (CPS) between 1976 and 2001. We restrict the sample to people who are not employed and aged 65 and over. Since the March questionnaire asks about income in the year prior to the survey, the pension income levels and coverage rates reflect the years 1975 through 2000. Since 1989, the March CPS provides information on income from private pensions. Between 1976 and 1988, however, income from private pensions, survivor and disability benefits are combined into a single category. To generate a time consistent series of data on pension income from a person's own prior employment, we estimate the probability that a retiree has private pension income conditional upon receiving some form of survivor, disability, or pension benefit using the CPS data for 1989 through 2001. The probability is allowed to vary by marital status, sex and age. These group specific probabilities are used to estimate whether a given person with pension, survivor or disability income prior to 1989 has pension income. This allows us to estimate a series of private pension coverage rates for retirees in the CPS between 1976 and 1988.¹¹ A similar approach is used to estimate private pension income for retirees receiving pension, survivor or disability income. A potential concern with this approach is that the probability of pension coverage conditional on receipt of pension, survivor or disability income may have changed over time leading to biased estimates for the 1976-1988 period.¹²

Figure 1 presents pension reciprocity rates by sex for the years 1975 through 2000. The pension reciprocity rate is defined as the percentage of people receiving pension income based on their own prior employment. People who receive income from a spouse's pension are not

¹¹ Turner (1988) and Holden (1999) model the decision to elect a survivor benefit for pension beneficiaries. Their models include additional controls that are not available in the CPS data we use.

¹² For example, if pension coverage became more common relative to disability income over time for a given person of a given age, sex, and marital status, our estimate of pension coverage for the earlier period would be overstated.

defined as covered in this context.¹³ At the beginning of the time period, the percentage of retirees receiving private pension income was 36 percent for men and 11 percent for women. By 2000, the reciprocity rates rose to 46 and 22 percent. Over the 20 year period, the percentage point gap between men and women showed little improvement. In fact, the gap grew during the 1970s and 1980s, and only recently fell back to the level observed in 1975.

Figure 2 plots the average level of pension benefits by sex for 1975 through 2000. The sample used to compute the averages includes people regardless of whether they are receiving any private pension benefits. For both men and women, pension benefits increased substantially over the 25 year period. For women, average pension benefits (in 2000 dollars) increased from approximately \$800 to \$1900. For men, average benefits rose from approximately \$3600 to \$6400. The ratio of women's to men's benefits increased slightly over the period from .23 to .29, but the dollar value of the gap grew.

Although women's pension coverage and benefits have shown little improvement relative to men's, one might find greater improvement for married women since they have shown the greatest improvement in labor market attachment over the past 50 years. The data support this hypothesis. In figure 3, pension coverage rates are presented for married, single,¹⁴ and widowed women. Whereas the coverage rates of single women have not shown much improvement over the past 25 years, there have been sharp improvements in coverage for married and widowed women. In 1975, pension coverage rates for single, married and widowed women were respectively 29, 8 and 10 percent. By 2000, the coverage rates were 33, 19 and 22 percent.

¹³ Even and Turner (1999) show that while the percentage of women who receive pension income from their own employment rose during the 1980s, the percentage who receive pension income from a spouse's pension declined as the coverage rate of married men fell and the percentage of women who are unmarried rose.

¹⁴ Divorced, separated, and never married are all classified as single.

Figure 4 shows that the trend in women's average pension benefit levels by marital status mimic those for coverage rates. Average pension benefits among married and widowed women rose relative to single women over the period. In 1975, average pension benefits for single, married and widowed women were approximately \$3,000, \$600 and \$600. By 2000, benefit levels were \$3,600, \$1,700 and \$1,600.

Overall, the evidence suggests that there have been only modest improvements in retired women's pension income relative to men's over the past 25 years. However, consistent with the fact that improvements in labor market attachment over the past 50 years have been greatest among married women, married women made much greater progress than single women in terms of benefits and coverage rates.

3. Pension Coverage Among the Working Age Population.

To examine the gender gap in pension coverage and income over the past 20 years in the working age population, we use information from the March Current Population Surveys (CPS). The March CPS provides data on people's pension coverage for the year prior to the survey.¹⁵ Coverage statistics are presented for people aged 40 to 60 at the time of the survey in figures 5 through 8.¹⁶ The **employee coverage rate** is measured as the percentage of workers that are included in an employer-sponsored pension plan, and the **population coverage rate** is the percentage of people (employed or not) included in an employer-sponsored pension plan. Between 1979 and 2000, the gender gap in both employee and population coverage rates

¹⁵ Interviewer instructions reveal that pension income is to include: (1) Company or union pension income; (2) Federal government civil service retirement income. (3) U.S. military retirement; (4) State or Local government pension; (5) U.S. Railroad retirement; (6) Regular payments from annuities or paid up insurance policies; or (7) regular payments from IRA or KEOGH accounts.

¹⁶ All of the coverage statistics are calculated using the CPS final weights.

diminished substantially starting at 28 percentage points in 1979 and falling to 11 percentage points by 2000; the gap in employee coverage rates fell from 17 to 5 percentage points. The decline in the size of the gap came primarily from increased coverage among women, though a slight decline in coverage among men played a role.

Men's pension coverage rates are compared to those of married and single (never married, divorced, separated, or widowed) women in figures 7 and 8.¹⁷ The sample is restricted to people 40 to 60 years of age. While both employee and population coverage rates improved for married women, they remained flat for single women. Between 1979 and 2000, the employee coverage rate rose from 41 to 54 percent for married women while it fell from 55 to 52 percent among single women; population coverage rates rose from 25 to 41 percent among married women and rose from 41 to 42 percent among single women.

4. Projected Pension Coverage and Income Among 40-60 Year Olds.

While the bulk of evidence presented thus far suggests that women's retirement income has improved only slightly relative to men's over the past 20 years, there is some evidence that it may improve in the near future. For example, Johnson, Sambamoorthi, and Crystal (1998) examine sex differences in pension accumulation among workers covered by a pension for full-time workers aged 51 to 61 in 1992. In this sample, they estimate that women accumulated almost 60 percent as much pension wealth as men. This is substantially higher than the pension income ratio of .29 found for current retirees in the March CPS data. However, much of the difference could be explained by the fact that the CPS data includes all retirees whereas this statistic refers to full-time workers covered by a pension.

¹⁷Single women include anyone who is divorced, separated, never married or widowed at the time of the survey.

While the existing work provides some forecasts of pension income by sex, the structure of the results makes it difficult to make a broad based comparison of men's and women's pension accumulation across time. This study includes all men and women, regardless of their work or pension status and estimates pension income separately for husbands and wives.

The fact that sex differences in pension coverage rates are much lower in the working age than the retired population provides some optimism for a narrowing of the gender gap in pension income in the future. However, the extent of convergence will depend on several factors other than coverage rates. For example, sex differences in years of current and past pension participation, the generosity of the pension plans, and earnings will all impact the extent of differentials among future cohorts of retirees.

We use three data sources that include information on lifetime work history and pension coverage: the 1982 Newly Entitled Beneficiary Survey (NEBS), the 1992 Health and Retirement Study (HRS), and the 1992 Survey of Consumer Finances (SCF). The NEBS data was collected from people between the ages of 62 and 70 that were newly entitled Social Security Beneficiaries in 1982 or a spouse of a newly entitled beneficiary. A detailed description of the NEBS data can be found in Even and Macpherson (1994) where it is also shown that the NEBS is representative of retirees in that age group. While the NEBS data were collected only 10 years prior to the HRS and SCF data, the age differences of the samples are greater. The NEBS data are for people born between 1912 and 1920; the HRS includes people born between 1931 and 1941; and the sub-sample of the SCF used here includes people born between 1932 and 1952. All three data sets provide information on lifetime work history and pension coverage. NEBS measures pension income being received by retirees in 1982. In the HRS and SCF,

forecasts of pension income must be calculated for those who are still employed. For people who are retired, pension income is measured directly.

In the HRS and SCF, information is provided on pension coverage from current and past jobs. For current jobs, both data sets indicate the type of any plan that the worker has, the number of years in the plans, and other information that we use to forecast future retirement income at age 65. Forecasting retirement income requires assumptions on wage growth, interest rates, and inflation rates that are described in detail in the data appendix.¹⁸

For defined benefit (DB) plans that workers are currently enrolled in, we estimate the annual benefit the worker will receive for a retirement at age 65. For defined contribution (DC) plans that workers are currently enrolled in, we estimate the account balance that the worker will have accumulated by age 65 if contributions continue at their current percentage of pay and estimate the annual benefit that would result if a single life annuity was purchased at age 65 with the account balance.

For people not currently employed and those with pensions from prior jobs, we convert the value of any pension that they accumulated in the past into an equivalent age 65 annuity. For example, if a person ceased employment at age 58 and had a DC plan, we compound the balance forward to age 65 (in 1992 dollars) and use an annuitization factor to compute the size of the life annuity that could have been purchased at age 65. If the person had a DB plan, we compute the cost of the annuity they are receiving (or will receive) in 1992 dollars, and then convert this into an equivalent age 65 annuity using the method described for DC plans.

The differences between these three data sets raise some potential problems with comparing benefit levels over time. Benefit levels in the NEBS data are observed whereas they

¹⁸ Some of the more important assumptions outlined in the appendix are 1.1 percent real wage growth, a 3.7 percent real interest rate, a 7.0 percent nominal interest rate, and group annuitant mortality rates.

are forecast in the HRS and SCF. Inaccurate assumptions on interest rates, wage growth, retirement age, or the propensity to spend pension distributions prior to retirement could lead to biased estimates of future benefits. To the extent that these assumptions have similar effects on men's and women's benefits, estimating the gap in benefits should difference out some of the bias.

Table 2 provides a summary of pension and labor market statistics from the three data sources. The statistics are provided separately for men, married women, and single women. Changes in pension coverage among women over time can be seen by comparing the NEBS cohorts (birth years 1912-20) with the more recent HRS (1931-41) and SCF (1931-52) cohorts.¹⁹

The percentage of people expecting or receiving a pension benefit is quite stable among men across the three data sets, ranging between 62.7 and 65.4 percent. In contrast, the population coverage rate rises sharply for both single (never married, divorced, separated, or widowed) and married women with an increase from 17.0 in the NEBS cohort to 39.9 and 38.2 in the HRS and SCF cohorts, respectively. For single women, the increase in coverage was more modest with an increase from 37.5 in NEBS to 45.0 and 50.5 in the HRS and SCF.

Women's pension benefits have risen relative to men's over time. In the NEBS cohort, married women's pension benefits are only 14 percent of men's. In the more recent HRS and SCF cohorts, their benefits are 35 and 30 percent of men's. Single women's benefits averaged 32 percent of men's in the NEBS cohort, but rose to 40 and 53 percent of men's benefits in the HRS and SCF cohorts.

One potential explanation for women's rising coverage rates and benefit levels is their increased labor market attachment. One measure of this increased attachment is the decline in

¹⁹ Population weights were used to calculate all of the statistics.

the percentage of women who report no prior employment.²⁰ Among married women, this percentage dropped from 37.4 in the NEBS cohort to 8.6 and 7.1 in the HRS and SCF cohorts. For single women, it dropped from 16.0 in the NEBS cohort to 3.8 and 3.2 in the HRS and SCF cohorts.

A further indication of rising labor market attachment is that, among people with some prior employment, gender differences in the amount of labor market experience acquired by retirement age are lower in the more recent cohorts of married women. Compared to men, married women accumulated 57 percent as much labor market experience by retirement in the NEBS cohort. In the HRS and SCF cohorts, women are projected to accumulate 69 and 75 percent as much experience by retirement. Single women have more labor market experience than married women in all three cohorts, but the gap is closing over time.

Measures of labor market experience are provided by pension coverage status in table 3. An interesting pattern emerges. While married women's labor market experience improved relative to men's in the population as a whole, the improvements are less pronounced when the sample is split by pension coverage. For example, while the female-male ratio of experience at retirement for all people with prior work experience improved substantially between the NEBS and HRS and SCF cohorts, there was little improvement (perhaps a slight decline) in the ratio for women with pension coverage. For single women with pension coverage, the female-male experience ratio is slightly lower for more recent cohorts. Among people without pension coverage, the female-male experience ratio is lower in more recent cohorts of married women but the change is much less pronounced than in the population as a whole. For single women without pensions, there is mixed evidence on changes in experience levels relative to men.

²⁰ Prior employment is based on employment between 1950 and 1982 in NEBS, employment in the 20 years prior to the survey in the HRS, and employment beyond age 14 in the SCF.

The fact that women's labor market experience improved only slightly among the pension covered population despite sizable improvements in the population at large is consistent with a sorting effect of pensions. Even and Macpherson (1990b) argue that the deferred pay component of pensions is unattractive to women with a weak attachment to the labor market. Over time, women's labor market attachment improved and more women moved into pension covered employment. However, since pensions help screen out the women with loose labor market attachment, there have been only small improvements in the labor market attachment of women with pensions. Moreover, the sector without pension coverage continues to attract the workers with lower labor market attachment, as suggested by the lower levels of labor market experience among women without pension coverage in all three cohorts.

Among pension covered workers, there is little evidence of improvement in women's pension benefits relative to men's. Married women's average pension benefits as a percentage of men's were virtually flat across the three cohorts (52 percent in the NEBS, 51 percent in the HRS, and 49 percent in the SCF). Single women's benefits show no improvement relative to men's between the NEBS and HRS, but show improvement between the NEBS and SCF (55 percent in NEBS; 53 percent in HRS and 66 percent in SCF).

5. The Source of Sex Differences in Pension Benefits.

In this section, we investigate the extent to which improvements in women's labor market attachment and earnings can account for the improvement in their benefits relative to men. We also investigate whether elimination of gender differences in earnings and experience would cause gender differences in pension benefits to vanish.

To quantify the effect of gender differences in earnings and experience on pension benefits, we use decomposition methods.²¹ In the case of coverage, we estimate a probit model of coverage using either the sample of single or married women and estimate how much higher their pension coverage rate would be if their labor market characteristics were identical to men's. To be precise, define b as a $(K \times 1)$ vector of estimated coefficients from a probit model of pension coverage; N_1 and N_2 as the sample sizes of the two groups being compared (e.g. men and married women); and X_{1i} and X_{2i} as $(1 \times K)$ vectors of characteristics describing the i^{th} worker from the two samples. The explained portion of the gap in coverage between group one and two is calculated as

$$\text{Total Explained Gap} = \sum_{i=1}^{N_1} \left(\frac{1}{N_1} \right) \Phi(X_{1i}b) - \sum_{i=1}^{N_2} \left(\frac{1}{N_2} \right) \Phi(X_{2i}b)$$

where $\Phi(\cdot)$ is the standard normal cumulative density function. The portion of the explained gap attributed to differences in a particular characteristic X_j is calculated as:

$$\text{Explained gap due to differences in } X_j = \text{Total Explained Gap} \cdot \left[\frac{\Delta \bar{X}_j b_j}{\Delta \bar{X} b} \right]$$

where $\Delta \bar{X}$ is the $(1 \times K)$ vector of the differences in mean characteristics between groups one and two, and $\Delta \bar{X}_j$ is the difference in means for the j^{th} characteristic.²²

An important complication in estimating the explained gap in coverage is that the decomposition can be performed using the probit coefficients for either men or the relevant subgroup of women.²³ For example, the explained gap in coverage between men and married women could be estimated using either the male or married female probit coefficients.²⁴ Differences between the male and female

²¹ The decomposition methods use weighted regression estimates and weighted means.

²² This approach was first employed in Even and Macpherson (1990a).

²³ That is, b can be estimated from a probit model of coverage for either group one or group two.

²⁴ In the wage discrimination literature, some argue that it is appropriate to use the male coefficients for the decomposition since it reflects the nondiscriminatory returns to characteristics. On the other hand, Neumark (1988) develops a theoretical framework in which the nondiscriminatory wage structure is represented by the coefficient estimates for the two groups combined.

coefficients could reflect gender-based employer discrimination, or gender differences in the demand for pensions.

To perform the decomposition of the coverage gap, we estimate a probit model of coverage with controls for age, education, and years of labor market experience. In the case of benefits, we restrict the sample to people expecting or receiving a pension benefit and estimate a log-linear equation of benefits as a function of salary at retirement, years of participation in all pension plans at retirement (HRS) or years of experience at retirement (NEBS and SCF). Since the benefit equations are estimated with ordinary least squares, the decomposition methods are identical to those pioneered by Oaxaca (1973) and Blinder (1973). As with the probit model, the decomposition may be performed with either male or female coefficients.

The decomposition of coverage differentials is presented in the top panel of table 4. The decompositions are performed separately using male and female coefficients. Gender differences in age and education account for very little (3 percentage points or less) of the gender gap in pension coverage in all three cohorts of married and single women, regardless of whether male or female coefficients are used for the decomposition.

Sex differences in experience explain over one-half of the total gap in coverage in all six comparisons. The improvement in women's labor market experience in the more recent cohorts of women contributed to a decline in the gender gap in coverage. Based on the decompositions that use the female coefficients, among married women, sex differences in experience accounted for 40 points of the 48 percentage point gap in coverage in the NEBS cohort, 23 of 24 points in the HRS cohort, and 24 of 25 points in the SCF cohort. Among single women, experience differentials account for 24 points of the 28 percentage point gap in the NEBS cohort; 18 of 19 in the HRS cohort; and 12 of 12 in the SCF. Hence, the increased

labor market attachment of women accounts for most of the improvement in women's pension coverage relative to men's. Also, the analysis implies that virtually all of the gender gap in pension coverage would vanish if gender differences in experience were eliminated. The decompositions that use male probit coefficients also suggest that improvements in women's labor market experience have contributed to a smaller gap in pension coverage over time. However, the estimated effect of experience on the gap is smaller in each of the six comparisons. This reflects the fact that experience has a smaller effect on the pension coverage of men than women.

In the bottom panel of table 4, gender differences in the level of pension benefits are examined. This analysis is restricted to workers covered by a pension. Referring to the decompositions that rely on female probit coefficients, we conclude that differences in salary and years of experience account for a substantial share of the gap in benefit levels for people covered by a pension. Among married women, approximately one-half of the gap in benefits can be accounted for by sex differences in earnings and experience in all three cohorts. This result is consistent with the notion that, although women's labor market attachment has grown in the labor market as a whole, it has not improved substantially among pension covered workers. The decompositions that employ male coefficients lead to qualitatively similar conclusions.

Among single women, it is more difficult to ascertain the effect of changes in labor market attachment and earnings on benefit levels across cohorts. Depending on whether male or female coefficients are used for the decomposition, different conclusions can be drawn as to whether changes in gender-based experience and salary differentials contributed to expansion or closure of the gap in benefits over time.

The decompositions provide strong evidence that women's lower income and experience levels continue to be an important source of gender differences in pension benefit levels for both married and single women. At the same time, nearly one-half of the gap in benefits between men and married women would remain if married women's experience and income levels rose to match men's.²⁵

What could account for this large "unexplained" portion of the gap in benefits? While it is beyond the scope of this paper to provide a detailed examination of this question, we point to several possibilities. First, women are more likely to work part-time than men. Among workers predicted to receive a pension benefit in the SCF, married women have twice as many years of part-time experience as men. During part-time years, workers accumulate fewer pension assets. Second, women may be in jobs with less generous pensions, or may choose to contribute less to their plans. In support of this hypothesis, Levine, Mitchell and Phillips (2002) report that pensions offered in predominantly female occupations generate a lower level of retirement income. Third, there is evidence that, if participation in a pension plan is voluntary (as is true with most 401(k) plans), women are less likely to participate than men.²⁶

VI. Summary and Conclusions.

Because of their lower earnings and weaker labor market attachment, women's employment has historically generated less retirement income than that of men. This study documents trends in the gender gap in employment based retirement income and examines prospects for narrowing the gap over the next two decades. Our evidence reveals that the gender

²⁵ This statement is based upon the decompositions that use the female regression coefficients. The unexplained portion of the gap is reduced somewhat if the male coefficients are used.

²⁶ Even and Macpherson (2000) estimate that, when offered a 401(k) plan, men are 30 percent more likely to participate than women.

gap in Social Security and pension income has been stagnant over the past 20 years despite increases in women's labor force attachment and earnings. Several explanations for this result are provided. First, the structure of the Social Security spousal benefits formula and amendments to the benefit formula that occurred in the 1970s contribute to a lack of improvement in women's benefits relative to men's. Second, while women's private pension coverage rates rose relative to men, the growth in coverage rates has not been sustained for a sufficiently long time to impact the current cohort of retirees.

Our forecasts indicate that women's private pension income should rise sharply relative to men's over the next 20 years. We project that married women who retire over the next 20 years will have pension benefits that average between 35 and 40 percent of men's. This is a strong improvement compared to the married women who retired in the 1970s and 1980s whose benefits were about 15 percent of men's. We also project improvements in single women's benefits relative to men, but the rate of change is not as substantial.

Among people covered by a pension, women retiring over the next twenty years should expect approximately one-half as much in pension benefits as men. This statistic has not improved much over time. One reason for this is that women's labor market experience and incomes have been fairly stagnant relative to men's in the population of pension covered workers. Also, holding salary and experience constant, women accumulate less pension wealth than men.

In conclusion, while the gender gap in pension income and Social Security has been stagnant over the past 20 years, improvements should occur over the next twenty years. Nevertheless, a substantial gap is likely to remain even if the experience and salary gaps are

eliminated. Future research is required to determine why women accumulate less pension wealth even if they have the same experience and earnings as men.

References.

- Allen, Steven; Clark, Robert; and McDermed, Ann. "Post-Retirement Benefits Increases in the 1980s." In John Turner and Dan Beller, eds., *Trends in Pensions 1992*. Washington: U.S. Department of Labor, 1992.
- Blinder, Alan S. "Wage Discrimination: Reduced Form and Structural Estimates." *Journal of Human Resources* 8 (Fall 1973): 436-455.
- Employee Benefit Research Institute, *EBRI Databook on Employee Benefits*, 4th edition, 1997.
- Even, William E., and Macpherson, David A. "Plant Size and the Decline of Unionism." *Economics Letters* 32 (April 1990): 393-98.(a)
- _____. "The Gender Gap in Pensions and Wages," *Review of Economics and Statistics* 72 (May 1990): 259-65. (b)
- _____. "Gender Differences in Pensions," *Journal of Human Resources* 29 (Spring 1994): 555-587.
- _____. "The Changing Distribution of Pension Coverage," *Industrial Relations* 39 (April 2000): 199-227.
- Even, William E. and John A. Turner. "Has the Pension Coverage of Women Improved?" with John Turner. *Benefits Quarterly* 15 (Second Quarter 1999), 37-40.
- Holden, Karen. "Women as Widows under a Reformed Social Security System," in *Prospects for Social Security Reform*, edited by Olivia Mitchell, Robert Myers and Howard Young. Philadelphia: Pension Research Council, The Wharton School, University of Pennsylvania, 1999.
- Johnson, Richard; Usha Sambamoorthi, and Stephen Crystal. "Gender Differences in Pension Wealth: Estimates Using Provider Data." Unpublished paper, 1998.
- Levine, Phillip, Olivia S. Mitchell, and John Phillips. "Worklife Determinants of Retirement Income Differentials Between Men and Women". In *Innovations in Financing Retirement*. Zvi Bodie, Brett Hammond, and Olivia S. Mitchell, eds. Pension Research Council. Philadelphia, PA: University of Pennsylvania Press, 2002: 50-76.
- _____. "A Benefit of One's Own: Older Women's Retirement Benefits Under Social Security." *Social Security Bulletin* 63 (2000): 47-53.
- Myers, Robert. *Social Security*, Fourth edition. University of Pennsylvania: Pension Research Council, 1993.
- Neumark, David. "Employers' Discriminatory Behavior and the Estimation of Wage Discrimination." *Journal of Human Resources* 23 (Summer 1988): 279-95.

Oaxaca, Ronald. "Male-Female Wage Differentials in Urban Labor Markets." *International Economic Review* 14 (October 1973): 693-709

Society of Actuaries Group Annuity Valuation Task Force, "1994 Group Annuity Mortality Tables and 1994 Group Reserving Table," *Transactions of the Society of Actuaries* 107 (1996): 865-913.

Turner, John A. "Pension Survivors Insurance for Widows" *Economic Inquiry* v26 (July 1988): 403-22

Table 1. Average Monthly Social Security Benefit for New Awards by Type of Benefit and Sex: 1980-2000.*

Year	Average Retirement Benefit**			Average Spousal Benefit		Average Monthly Benefit***		
	Women	Men	Female - Male Ratio	Women	Men	Women	Men	Female-Male Ratio
1980	276	425	0.65	171	112	240	422	0.57
1981	306	470	0.65	192	120	268	466	0.57
1982	309	487	0.63	206	127	275	483	0.57
1983	316	497	0.64	215	131	283	492	0.57
1984	322	507	0.64	218	133	288	502	0.57
1985	332	526	0.63	225	136	297	520	0.57
1986	340	543	0.63	229	137	304	538	0.57
1987	358	577	0.62	243	144	322	571	0.56
1988	373	604	0.62	255	152	337	598	0.56
1989	397	644	0.62	271	167	359	639	0.56
1990	424	689	0.62	289	173	383	684	0.56
1991	441	717	0.62	301	178	399	712	0.56
1992	460	743	0.62	311	182	416	738	0.56
1993	479	766	0.63	319	187	433	761	0.57
1994	499	793	0.63	329	194	451	788	0.57
1995	519	815	0.64	339	199	470	810	0.58
1996	539	844	0.64	351	211	491	839	0.58
1997	592	872	0.68	334	212	530	867	0.61
1998	585	894	0.65	335	214	520	888	0.59
1999	614	940	0.65	342	221	542	934	0.58
2000	665	1,023	0.65	348	224	576	1016	0.57

• Source: Monthly benefit data base maintained by the Office of the Chief Actuary of Social Security for Old Age and Survivors Insurance (<http://www.ssa.gov/OACT/ProgData/awards.html>).

** Dually entitled beneficiaries are counted as receiving a retirement benefit equal to the greater of the retirement benefit on their own earnings history and the spousal benefit. Awards of spousal benefits do not include anyone who is dually entitled.

*** The average monthly benefit is computed as a weighted average of the spousal and retirement benefits with the weights given by the number of beneficiaries of each type.

Table 2. Pension Coverage and Labor Market Characteristics by Sex and Marital Status.^a

	1982 NEBS			1992 HRS			1992 SCF		
	Men	Married women	Single Women ^d	Men	Married women	Single Women ^d	Men	Married women	Single Women ^d
Entire sample.									
Percent receiving/expecting a pension benefit	65.4	17	37.5	63.6	39.9	45	62.7	38.2	50.5
female-male ratio		0.26	0.57		0.63	0.71		0.61	0.81
Percent with no lifetime employment ^b	0.5	37.4	16.0	1.0	8.6	3.8	1.0	7.1	3.2
Average pension benefit (1992 dollars)	\$4,855	\$658	\$1,532	\$15,912	\$5,537	\$6,418	\$17,606	\$5,214	\$9,413
female-male ratio		0.14	0.32		0.35	0.40		0.30	0.53
Sample size	4225	4822	1927	4339	3274	1691	6378	5424	1312
People with some lifetime employment		74.8	32		8.6	3.8		7.1	3.2
Percent expecting/receiving a pension benefit	65.8	27.2	44.7	65.5	48.8	51.0	63.0	40.6	52.1
female-male ratio		0.41	0.68		0.75	0.78		0.64	0.83
Years of work experience at retirement ^c	27.2	15.6	20.7	32.5	22.3	23.8	42.2	31.7	35
female-male ratio		0.57	0.76		0.69	0.73		0.75	0.83
Final Income (1992 dollars)	\$38,082	\$17,642	\$19,757	\$44,789	\$23,105	\$23,405	\$56,015	\$28,821	\$34,295
female-male ratio		0.46	0.52		0.52	0.52		0.51	0.61
Average pension benefit (1992 dollars)	\$4,879	\$1,051	\$1,824	\$16,073	\$6,059	\$6,672	\$17,784	\$5,612	\$9,724
female-male ratio		0.22	0.37		0.38	0.42		0.32	0.55

^a The NEBS consists of newly entitled social security beneficiaries and their spouses between the ages of 62 and 70 in 1982. The HRS includes a random sample of people aged 51-61 in 1992; and the SCF includes a random sample of people aged 40 to 60 in 1992.

^b Lifetime employment is based on employment between 1950 and 1982 in NEBS, employment in the 20 years prior to the survey in the HRS, and employment beyond age and employment beyond age 14 in the SCF.

^c Experience measures are based on the 1950-1982 period in NEBS, employment in up to 4 prior jobs in the HRS, and employment since age 14 in the SCF.

^d Single women include those who are never married, divorced, separated, or widowed.

Table 3. Sex Differences in Labor Market Characteristics by Marital Status and Pension Coverage.^a

	1982 NEBS			1992 HRS			1992 SCF		
	Men	Married women	Single Women	Men	Married women	Single Women	Men	Married women	Single Women
People expecting or receiving a pension benefit									
years of experience at survey	27.8	21.9	25.1	27.2	19.9	20.9	29.2	23.8	25
female-male ratio		0.79	0.9		0.73	0.77		0.82	0.86
years of work experience at retirement	27.8	21.9	25.1	34.9	27.3	28.9	44.2	39.3	39
female-male ratio		0.79	0.90		0.78	0.83		0.89	0.88
final income (1992 dollars)	\$40,555	\$23,265	\$23,708	\$51,204	\$26,867	\$31,449	\$59,726	\$35,083	\$37,330
female-male ratio		0.57	0.58		0.52	0.61		0.59	0.63
average benefit given coverage (1992 dollars)	\$7,415	\$3,865	\$4,080	\$24,539	\$12,415	\$13,084	\$28,229	\$13,822	\$18,664
female-male ratio		0.52	0.55		0.51	0.53		0.49	0.66
People with some lifetime employment and no pension									
years of work experience at survey	26.1	13.2	17.1	21.3	10.8	11.9	26.3	16.8	19.2
female-male ratio		0.51	0.66		0.51	0.56		0.64	0.73
years of work experience at retirement	26.1	13.2	17.1	27.8	15.2	16.7	38.7	26.4	30.6
female-male ratio		0.51	0.66		0.55	0.6		0.68	0.79
final income (1992 dollars)	\$33,325	\$15,538	\$16,570	\$35,469	\$19,812	\$16,407	\$49,705	\$24,538	\$30,988
female-male ratio		0.47	0.50		0.56	0.46		0.49	0.62

^a The NEBS consists of newly entitled social security beneficiaries and their spouses between the ages of 62 and 70. The HRS includes a random sample of people aged 51-61 in 1992; and the SCF includes a random sample of people aged 40 to 60 in 1992.

^b Lifetime employment is based on employment between 1950 and 1982 in NEBS, employment in the 20 years prior to the survey in the HRS, and employment beyond age and employment beyond age 14 in the SCF.

^c Experience measures are based on the 1950-1982 period in NEBS, employment in up to 4 prior jobs in the HRS, and employment since age 14 in the SCF.

Table 4. Sources of Gender Gap in Pension Coverage and Projected Benefits by Women's Marital Status.

	NEBS		HRS		SCF	
	Married	Single	Married	Single	Married	Single
Total Gap in Lifetime Coverage	48%	28%	24%	19%	25%	12%
Portion of coverage gap explained by sex differences in	<u>Female coefficients used for decomposition</u>					
Age	0%	0%	0%	0%	0%	1%
Education	0%	1%	1%	2%	2%	2%
Years of Experience	40%	23%	22%	16%	21%	10%
Total Explained	40%	24%	23%	18%	24%	12%
	<u>Male coefficients used for decomposition</u>					
Age	-1%	0%	0%	0%	0%	0%
Education	-1%	0%	0%	1%	2%	3%
Years of Experience	29%	16%	15%	12%	12%	8%
Total Explained	27%	16%	15%	13%	14%	11%
Total Gap in Log of Benefits	0.75	0.62	0.77	0.67	0.73	0.44
Portion of gap in log of benefits explained by sex differences in:	<u>Female coefficients used for decomposition</u>					
Salary at retirement ^a	0.31	0.43	0.27	0.22	0.27	0.42
Years in pensions at retirement	--	--	0.13	0.09	--	--
Years of experience at retirement ^b	0.09	0.11	--	--	0.14	0.05
Total Explained	0.39	0.54	0.40	0.31	0.41	0.47
	<u>Male coefficients used for decomposition</u>					
Salary at retirement ^a	0.36	0.32	0.31	0.25	0.45	0.34
Years in pensions at retirement	--	--	0.14	0.11	--	--
Years of experience at retirement ^b	0.10	0.04	--	--	0.10	0.15
Total Explained	0.46	0.36	0.45	0.36	0.55	0.49

^a Salary at retirement is the salary in longest job in NEBS and the projected salary at age 65 in the HRS and SCF.

^b Years of experience at retirement is the number of years of experience between 1950 and 1982 in NEBS and projected years of experience beyond age 14 and prior to age 65 in the SCF.

Data Appendix: Estimation of Pension Income in the HRS and SCF.

In the HRS and SCF, information is provided on pension coverage from current and past jobs. For current and past jobs, both data sets indicate the type of plan(s) that the worker has, the number of years in the plan, and other information that we use to forecast future retirement income at age 65.

In the case of defined benefit (DB) plans, workers are asked when they expect to retire and the benefits they will receive at retirement. Benefits may be reported as either a percentage of final pay or as an absolute amount. For workers currently included in a pension, we estimate benefits for an age 65 retirement with the following steps: First, we project earnings at retirement by assuming a 1.1 percent annual growth rate in real wages. To translate this into a benefit at age 65, we first compute a “generosity factor” (the percentage of final pay replaced per year of service) by dividing expected benefits at retirement by the product of years in the plan and salary at retirement.²⁷ We then estimate benefits for an age 65 retirement as the product of the age 65 value of forecast earnings, number of years of service at 65, and the generosity factor.²⁸

For defined contribution (DC) plans, information is provided on the current balance in the plan and the amount that the employer and employee contribute. To project the real balance in the pension plan at age 65 in 1992 dollars, the current balance is compounded forward with real interest rates to age 65. The real interest rate is assumed to be equal to the yield on indexed Treasury bills in February 1998 (3.7 percent). Between 1992 and the year that the worker reaches age 65, it is assumed that both employer and employee contributions remain at the same percent of pay and that real salary growth continues at 1.1 percent. To the extent that DC

²⁷ Our methodology assumes that people report expected benefits in 1992 dollars.

²⁸ This approach could lead to either an over- or underestimate of true benefits if the generosity rate varies with years of service and/or age at retirement.

participants invest in stocks instead of bonds, our forecasts for DC balances are likely to be too low given the well known equity premium. Also, the estimates are likely to understate the true variance in account balances that will result from differential portfolio choices of DC participants.

We assume that all workers live to age 65 with certainty and compare benefits in DB and DC plans by converting projected DC balances into a single life annuity that begins at age 65. In the case of benefits that a worker expects to receive from prior pension plans, both the HRS and SCF indicate the type of pension (i.e. DB or DC). However, when a lump sum was received or a person is currently receiving a benefit, only the HRS provides information on the type of pension. In both cases, it is possible to tell whether a person received a lump sum distribution at some point in the past, is currently receiving benefits, or expects to receive benefits in the future. In the HRS, workers receiving lump sums indicate whether they saved or spent it. Only those balances that were saved are counted as benefits from past pensions. Unfortunately, in the SCF, no such information is available. To adjust for this, we use data from the April 1993 CPS to estimate a probit model of the probability of a person saving an LSD as a function of the worker's age at the receipt of the LSD and the size of the LSD.²⁹ For those with a lump sum that was saved (or we impute was saved), an equivalent age 65 annuity is computed as follows: (1) the lump sum is compounded forward to 1992 assuming historical interest rates;³⁰ (2) the 1992 balance is compounded forward from 1992 to the year the person reaches age 65 using an

²⁹ A worker was defined as "saving" an LSD if s/he used all of the lump sum for either (i) tax qualified saving; (ii) non-tax qualified saving; or (iii) a mix of the two. The models were estimated separately by gender and included controls for the inflation-adjusted size of the lump and its square; and the age the individual received the lump and its square.

³⁰ Interest rates prior to 1992 (the survey dates in HRS and SCF) are assumed equal to the rates observed on one-year U.S. Treasury bills plus .28 percent. We added .28 percent to the 1 year treasury rate to allow for the fact that returns on pension contributions will likely reflect interest rates on a longer term investment. The .28 percent per year is one-half of the average premium that 5 year bonds paid relative to one year bonds between 1953 and 1992.

assumed real interest rate of 3.7 percent (the rate on indexed Treasury bills); (3) the lump sum is converted into an annuity at age 65.³¹ The annuity calculation assumes constant nominal payments and uses an assumed nominal interest rate beyond 1992 equal to that on 10 year Treasury bills in 1992 (7.0 percent) and the mortality table for group annuitants provided by the Society of Actuaries.³² Using these assumptions, we estimate that a \$100 payment at age 65 would buy a life annuity of \$9.63 per year.³³

Separate calculations are required for pension benefits that people have already received or expect to receive from a past job. For people that report they are currently receiving benefits, we calculate the age 65 equivalent annuity as follows: First, we compute the present value (in 1992 dollars) of benefits received between the starting age and 65. Second, we compute the lump sum cost of a life annuity starting at age 65 equal to the annual benefit paid by the pension. These two parts are added and then converted into an age 65 life annuity. For pensions that a person is already receiving benefits from, we can determine whether cost of living adjustments have been provided. When such pensions are indexed for inflation, appropriate adjustments are made to reflect the growth in nominal benefits over time.³⁴

³¹ When a worker receives cost-of-living adjustments, the real interest rate is used to compute the annuity rate. Otherwise, nominal rates are used.

³² The source of the mortality rates is Society of Actuaries Group Annuity Valuation Task Force (1996), Table 13. The group annuitant mortality tables provide gender specific mortality rates. We compute an average mortality rate by taking a weighted average of the gender specific mortality rates where the weights represent the predicted fraction of the population of a given gender based on their mortality experience assuming each sex is half of the population at age 65.

³³ It is worth noting that we ignore differences between DB and DC plans in terms of survivor or disability benefits. In DC plans, the survivor has the right to the account balance. In DB plans, the survivor benefit is generally specified according to some formula tied to the worker's years of service and final salary.

³⁴ Inflation prior to 1992 is measured by historical movements in the Consumer Price Index. Inflation beyond 1992 is assumed equal to 2.7 percent which equals the difference between the nominal yield on 10 year bonds and the real yield on indexed Treasury bills in 1998. When evaluating an annuity that is indexed for inflation, the real interest rate is used instead of the nominal rate. Our assumption in valuing indexed pensions is that they are fully indexed to inflation. This is likely to be an overstatement of the value of indexing given evidence in Allen, Clark and McDermed (1992) that ad hoc cost of living adjustments tend to be less than full. Potentially offsetting this overstatement is the fact that we assume no indexation of pensions which have not yet paid benefits since no information is provided on indexing for such plans.

For people that expect a future benefit, it may be either a lump sum or an annual benefit. If the annual benefit is expressed as a percentage of pay, we use reported earnings in the last year of the job to predict the benefits at retirement. For annual benefits that start before age 65, we estimate the expected present value of the annuity assuming the person lives with certainty to age 65 and has survivor probabilities given by the group annuitant mortality tables beyond age 65. For a person that expects to receive benefits starting after age 65, we estimate the expected present value of the annuity (again accounting for survival probabilities beyond age 65) and discount back to age 65. Since no information is available on indexation of future pension benefits, we assume that the benefits are fixed in nominal terms when evaluating the annuity.

Figure 1. Percentage of Non-Employed over Age 65 Receiving Private Pension Benefits.

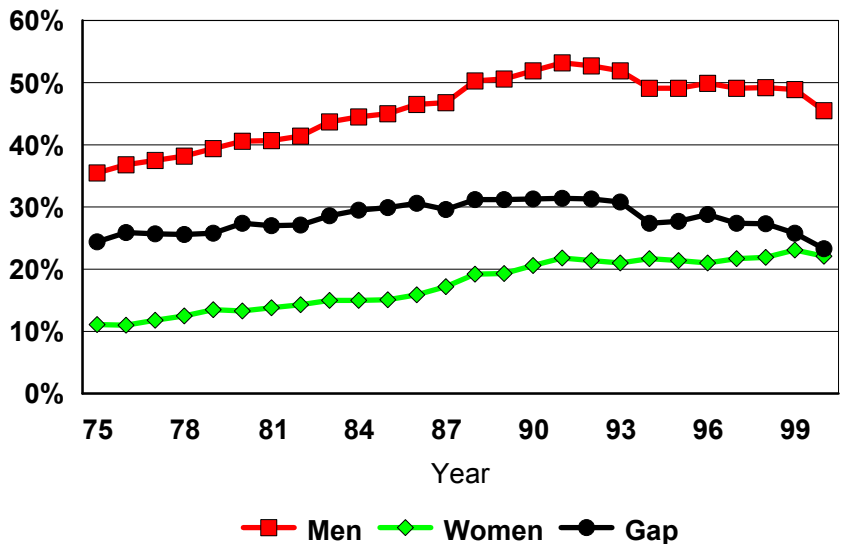
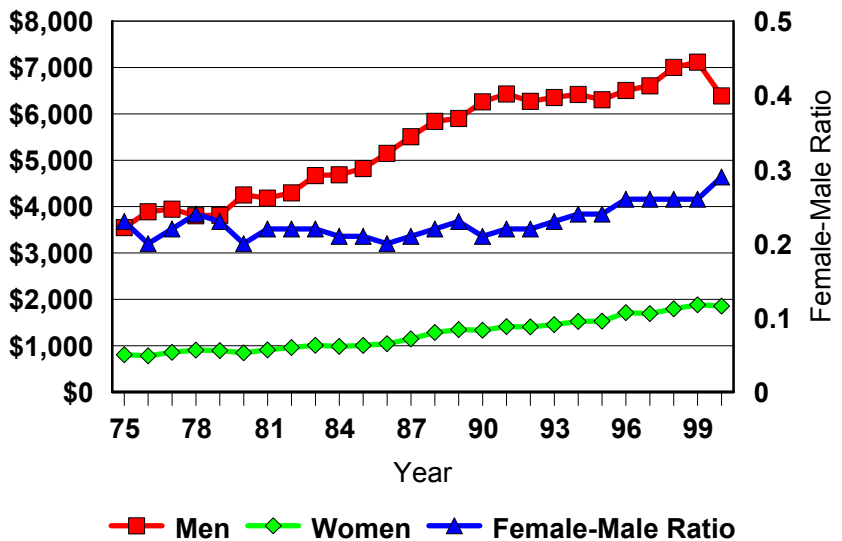


Figure 2. Average Private Pension Benefits Among Non-Employed Over Age 65



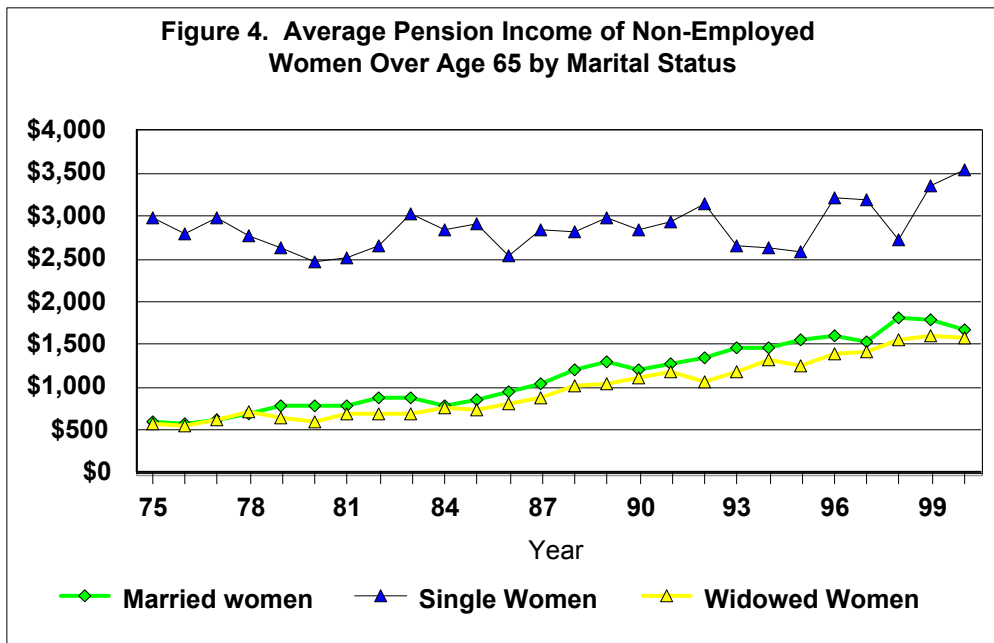
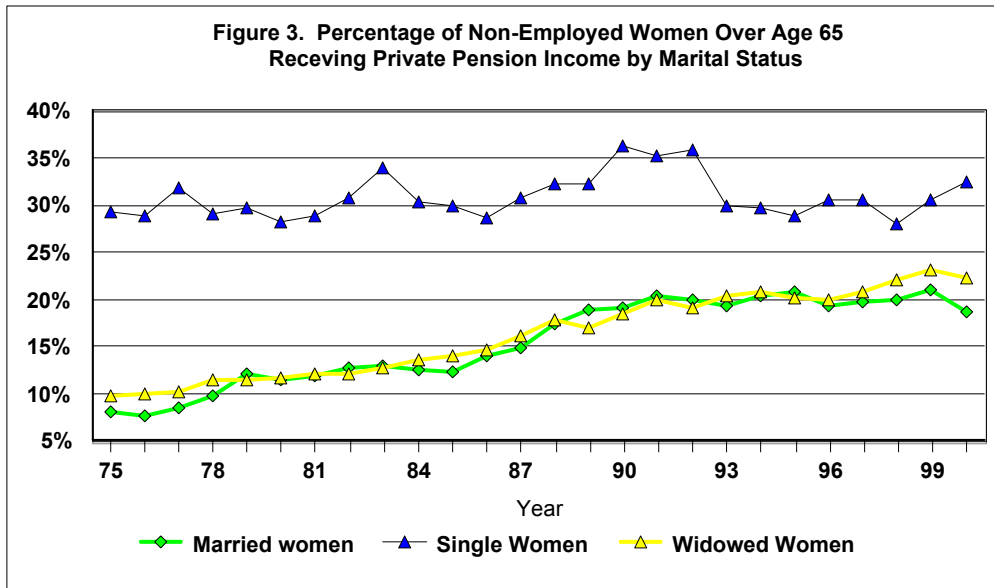
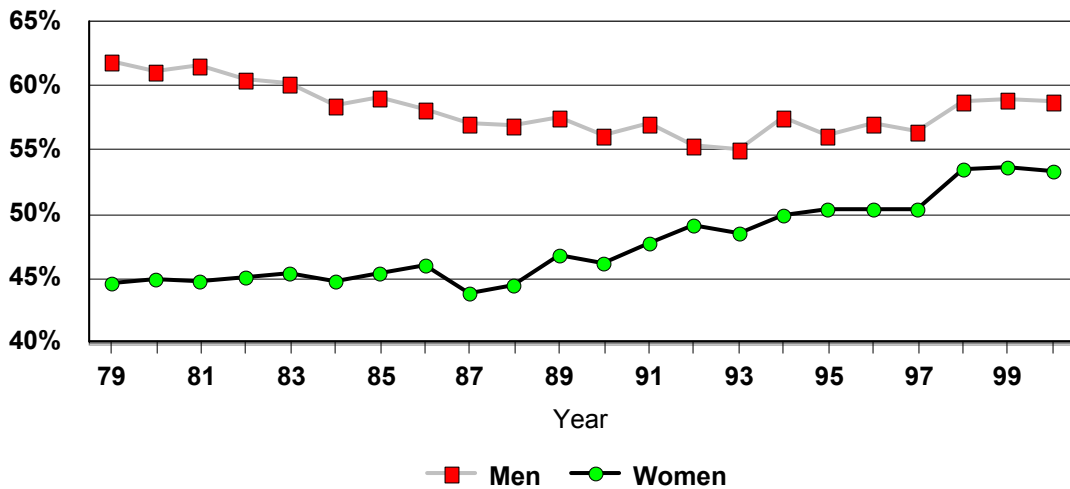
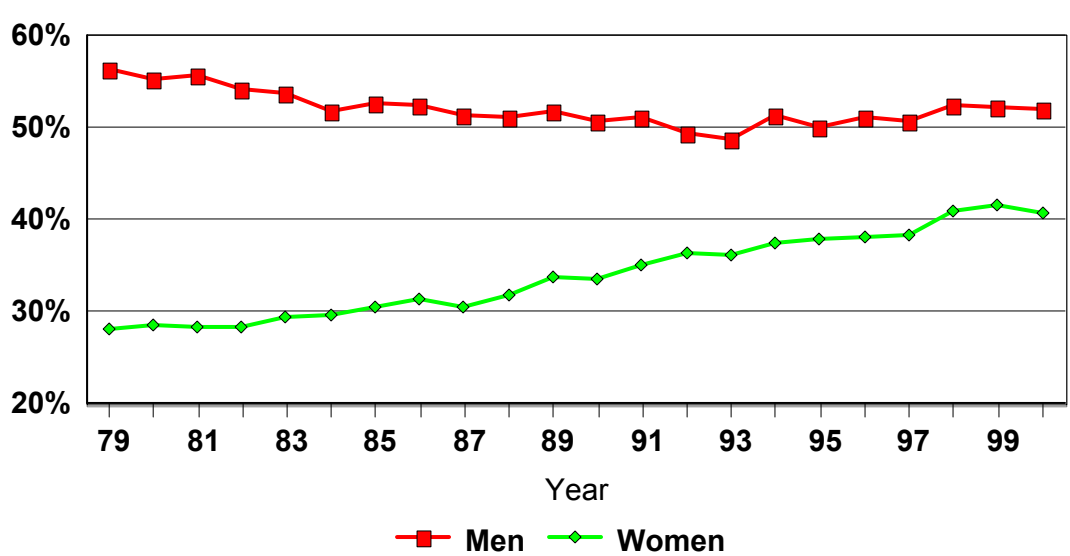


Figure 5. Employee Pension Coverage Rates by Sex



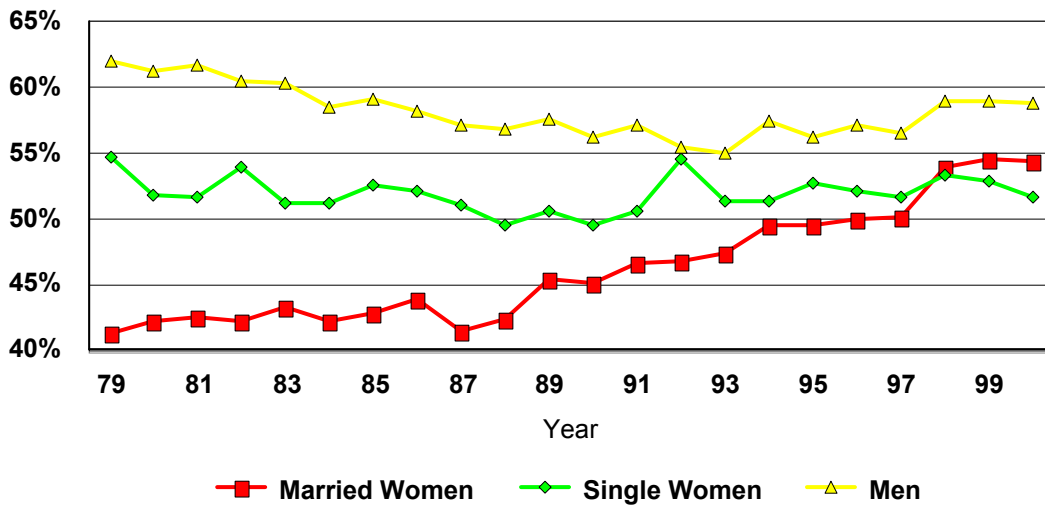
Note: Sample restricted to employed population aged 40 to 60.

Figure 6. Population Pension Coverage Rates by Sex



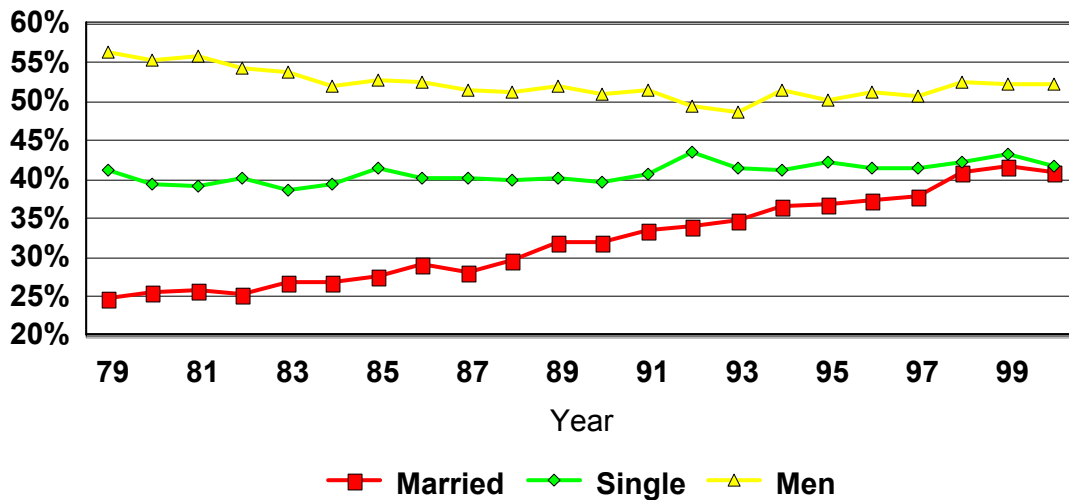
Note: Sample restricted to population aged 40 to 60.

Figure 7. Employee Pension Coverage Rates by Marital Status and Sex



Note: Sample restricted to employed population aged 40 to 60.

Figure 8. Population Pension Coverage Rates by Marital Status and Sex



Note: Sample restricted to population aged 40 to 60.