

# Gender Differences In The Investment Decision-Making Process

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*Previous studies have suggested that women are more risk averse than men, leading women to choose more conservative investments. This study used a sample of one person households from the 1995 Survey of Consumer Finances to explore gender differences in the investment decision-making process. The determinants of some investment decisions were found to differ by gender, but gender did not appear to be a critical determinant of investment choice. Women were more likely to hold risky assets if expecting an inheritance, employed and holding higher net worth; while men invested in risky assets if they were risk seekers, divorced, older, and college educated.*

**Key Words:** *Gender differences, Single-person households, Investment decisions, Risk aversion*

Researchers and financial practitioners have suggested that women choose to invest their financial resources more conservatively and are generally more risk averse than men (Bajtelsmit & VanDerhei, 1997; Bajtelsmit, Bernasek, & Jianakoplos, 1996; Hinz, McCarthy, & Turner, 1997; Yuh & Hanna, 1997). As a conservative long-term investment strategy can result in a lower accumulation of investment assets (Siegel, 1994), there may be serious implications for women who adopt such a strategy when planning for long-term financial goals.

Planning for a comfortable retirement is a good example of a long-term financial goal. The simple fact that women can expect to spend as many as five more years than men in retirement implies that retirement goals cannot be attained in the same manner for women as for men (U.S. Bureau of the Census, 1996, Table 120). The retirement planning problem is compounded by the fact that women, on average, have significantly lower earnings than men while needing to accumulate higher overall levels of retirement assets to support a longer period of retirement (U.S. Bureau of the Census, 1996, Table 726). The retirement problem becomes even more complicated by the fact that women have lower rates of participation in retirement plans compared to men (Sung, 1997). This combination of low-risk investing, lower earnings, little savings, and greater needs, presents women and their financial advisors with a significant challenge. While saving more for retirement is good advice, it may not be practical given immediate consumption needs. While expecting to live longer is a benefit of being a woman, it places greater demands on retirement assets. Given that

most people would not want to shorten their life spans, and that increasing one's saving rate is difficult for those with low earnings, the remaining component that can be changed to improve the long-term financial outlook for women is the expected rate of return of their investments.

This study differs from other research because it focuses specifically on women living alone and how their investment decisions differ from men living alone. It is reasonable to assume that many married couples make investment decisions together, and that individuals with dependent children may choose to invest differently than those without children. By analyzing only single-person households, the impact of other household members' investment decisions and attitudes is controlled for, allowing a focus on any real differences that may exist between the investment decisions of men and women.

## **Literature on Gender Differences in Investing**

Sung and Hanna (1996) found single women to be less risk tolerant than single men or married couples. Sung (1997) found that an exogenous spouse effect existed regarding the decision to invest most retirement funds in stocks, implying that the investment decisions of married women were influenced by the level of risk tolerance of their spouses. Sung also found that the overall financial characteristics of the household had a significant effect on the decision to participate in retirement plans.

Bajtelsmit and VanDerhei (1997) used 1993 data provided by a large pension plan sponsor to identify gender differences in pension allocation. The sample of

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20,000 management-level employees had the choice of directing their pension contributions to employer stock, a diversified equity portfolio, a government bond portfolio, a social choice equity fund, or a guaranteed interest fund. Bajtelsmit and VanDerhei found that women were significantly more likely to choose the guaranteed interest fund while men opted for employer stock.

Bajtelsmit, Bernasek, and Jianakopolos (1996) used the 1989 Survey of Consumer Finances (SCF) to examine gender differences in financial risk taking as it pertained to defined contribution pension allocations. The study also examined the proportion of household wealth which was invested in risky pension assets. Bajtelsmit, et al. found women to be more risk averse than men and the proportion of their wealth invested in risky pension assets decreased with wealth. Hinz, McCarthy, and Turner (1997) reported similar findings from their study of participants in the Thrift Savings Plan for federal government workers. They concluded that men were more likely to hold risky assets and that men invested a higher proportion of their pension wealth in these risky assets.

Yuh and Hanna (1997) used 1992 SCF data to study the demand for risky assets in retirement portfolios. Their sample consisted of individuals age 70 years and younger who had not yet retired. Yuh and Hanna found that male-headed households had the highest proportion of risky assets in their retirement portfolios while female-headed households had the lowest.

Not all previous studies have found a significant gender effect on investing behavior. Zhong and Xiao (1995) used the 1989 SCF, finding no gender effect on dollar holdings of stocks, even though Xiao (1995), using the same sample, found men more likely to hold stocks and less likely to hold CDs. DeVaney and Su (1997) found that the determinants of retirement planning knowledge were similar for men and women. Furthermore, Masters and Meier (1988) found no differences in the risk-taking propensity between male and female entrepreneurs.

#### **A Conceptual Background for Investment Decisions**

Investor's wealth, investment objectives, attitude toward risk, and investment horizon have been shown to be the primary determinants of choice among investment asset classes (Butler & Domian, 1991). For households in which financial assets represent a small portion of total wealth, research indicates that asset categories with the highest expected returns should be chosen (Hanna & Chen, 1995). Hanna and Chen found that it is optimal for

almost all households with a time horizon of at least five years to invest in small stocks. Young households were advised to choose more risky assets than older households who had a shorter time horizon and may not be able to endure market fluctuations. Moreover, Sung and Hanna (1996) suggested that risk tolerance in investing should be related to the number of years until expected retirement.

Several explanations have been offered for the more conservative investment strategy adopted by women (Bajtelsmit & Bernasek, 1996). Guiso, Jappelli, and Terlizzese (1996) found that education, income, and net worth were positively correlated with investments in risky assets. Women typically have lower lifetime earnings than men, which would create lower total wealth, or net worth, and women have historically completed fewer years of education than men (U.S. Bureau of the Census, 1996, Table 242). Sung and Hanna (1996) suggested that households with total financial assets below three months of income may not be in a position to invest in risky assets, as market volatility could be disastrous. Sung and Hanna also indicated that risky assets may be inappropriate for individuals with short-term goals such as saving for a down payment on a house.

Several recent studies have reported that women were more risk averse, choosing less risky retirement assets than men (Yuh & Hanna, 1996; Sung, 1997; Bajtelsmit & VanDerhei, 1997). This conservative approach to retirement investing is likely to be observed in other investment decisions. Because stocks and personal businesses are typically viewed as more risky investments, it is expected that women will choose these types of assets less often than their male counterparts. It is also expected that women will invest greater proportions of their portfolios in low-risk, lower return assets such as certificates of deposit and homes.

#### **Sample and Analytical Methods**

The data set used in this study was the 1995 Survey of Consumer Finances (SCF). The Survey was sponsored by the Federal Reserve Board and collected in cooperation with the Department of the Treasury. The SCF was designed to be an instrument for the study of individual household assets and liabilities. Of the 4,299 households surveyed for the 1995 SCF, 839 were single-person households. This sample of single-person households was chosen for two reasons. First, most multi-person households were classified as male headed, even if there were two earners and financial

decision-makers in the household. Second, it was critical to control for the unmeasurable impact of portfolio allocation decisions, attitudes, and the general influence of other household members. By studying only single-person households, differences in investment decision-making that may exist between men and women can be better isolated. For the multi-person households in the SCF, it is impossible to identify the primary investment decision-maker, furthermore, asset allocation will reflect the family's group decision-making process, blurring any gender differences that may exist. For example, the wife in a working couple may reasonably decide to follow a more aggressive investment strategy, purely in response to her husband's conservative strategy. While a study of such interactions between the investment decisions of husbands and wives was possible if the entire SCF sample were used, it would distract from the primary objective of this study--identifying any differences in investment decisions that were purely a result of gender.

A unique characteristic of the SCF is that missing data in the survey was imputed five times by drawing repeatedly from a conditional distribution of the data. The five imputates were stored as five successive data records (Kennickell, 1997) and the proper use of these five data sets is outlined in Montalto and Sung (1996). This study used all five imputates to derive the best single estimate of central tendency for all continuous variables analyzed. The reported measures of central tendency are the average of the point estimates from the five imputates. All measures of central tendency for continuous variables (e.g. amounts of CDs, stocks, homes, businesses, financial assets, total assets, income, net worth, age and years of employment) were calculated using all five imputations.

Similarly, for the multivariate analysis, the average of the five imputed variables was used in parameter estimation. Parameters were estimated using the Tobit estimation procedure, as a significant proportion of single-person households did not report investments in each of the four asset categories analyzed. The estimated parameters were compared across gender by reporting the estimated values, along with an indication of significant differences in individual and collective parameter estimates. The significant differences between individual parameters were identified by estimating gender full-interaction models for each asset category. These models were estimated using the entire sample of men and women with each variable in the model interacted with gender. If the

interaction term was significant, the coefficients of the separate gender models were considered to be significantly different. A likelihood ratio test is used to test for differences in the collective parameter estimates. The likelihood ratio statistic was calculated as  $-2(\text{Loglikelihood}(\text{UR})-\text{Loglikelihood}(\text{R}))$ , where the unrestricted model was the full-interaction model described above and the restricted model assumed all of the interaction terms in the pooled regression to be zero. The calculated likelihood ratio statistics were chi-square distributed with degrees of freedom equal to the number of restrictions, which was 19 in this study. Maddala (1992) provides further details on the testing procedures used in this study.

### Empirical Model and Testable Hypotheses

Based on the previous empirical literature and the accepted conceptual framework for investment decisions, four types of investment decisions were modeled. The types of investment decisions differ in placement on the individual investors' risk-return pyramid. Individuals seeking high risk and higher returns were hypothesized to allocate more of all resources toward businesses and more financial resources toward stocks, while more conservative investors were expected to invest more financial assets in CDs and a higher portion of total resources were expected to be tied to their personal residence. While it cannot be assumed that all personal residence investments are low risk--low return investments, and all business investments are high risk--high return investments, it is safe to assume that investors generally perceive business investments to be riskier than personal residence investments.

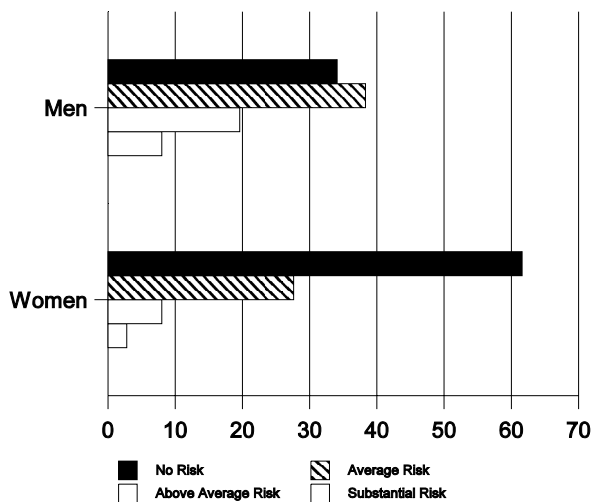
The dependent variables for the empirical models were four ratios based on the proportion of financial or total assets invested in each category. Stock and CD investments were analyzed in relation to financial assets, while housing and business investments represent a proportion of total assets. The determinants of these investment decisions were expected to be investor wealth (measured by net worth, received or expected inheritances, employment status and income), attitude toward risk (a self-reported ranking which ranged from not willing to take investment risks to willing to take substantial risks), investment horizon (measured by age and a short-horizon indicator variable identifying saving and investment decisions made within a three month period) and individual investors' characteristics (race, marital status, and education).

Formally, women were hypothesized to demonstrate more risk averse behavior than men through their choice of less risky investments, while single men and women were hypothesized to have the same basic determinants of investment decisions.

**Results**

Table 1 shows selected differences between men and women in the sample. Nearly 60% of the weighted sample was female. Men and women report strikingly different attitudes toward risk (see Figure 1). Sixty-two percent of women indicated that they were not willing to assume any risk, compared to 34% of men who were not willing to take risks. Nearly 60% of the men in the sample indicated that they were willing to assume average or above average risk, while only 36% of women self-identified as risk tolerant. Only 8% of men and 3% of women identified themselves as substantial risk takers.

**Figure 1**  
Percent of Men and Women in Each Risk Tolerance Category



Women in this sample were observed to invest less in risky assets than their male counterparts and more in assets involving little risk, historically yielding low returns. Nearly 20% of women invested an average of \$6,332 in certificates of deposit, compared to 13% of males investing \$5,574 in CDs. The mean of women's investment in stock was \$7,463, an amount less than one-third the mean for men in the sample, and nearly 25% of single men were investing in stocks, while only 18% of women chose stocks. Women avoided risky nonfinancial assets as well. Women held \$6,822 in business assets,

**Table 1**  
Means, Distributions, and Proportion Owning Assets for All One Person Households, and for Women and Men

Variable	All	Women	Men
Certificates of Deposit	\$6,052 (16.7%)	\$6,332 (19.6%)	\$5,574 (13.0%)
Stocks	\$13,881 (21.1%)	\$7,463 (18.1%)	\$24,818 (24.9%)
Total Fin. Assets	\$70,402	\$56,697	\$93,775
Home	\$46,515 (56.4%)	\$46,095 (57.8%)	\$47,228 (54.6%)
Business Assets	\$17,646 (16.1%)	\$6,822 (7.9%)	\$36,091 (26.5%)
Total Assets	\$161,902	\$131,092	\$214,386
Net Worth	\$144,617	\$119,320	\$187,707
Income	\$25,182	\$20,220	\$33,638
Years Employed	4.3	3.7	5.3
Employed Full-time	43.4%	33.7%	59.7%
Received Inheritance	23.4%	24.5%	21.5%
Expecting Inheritance	10.1%	9.5%	11.2%
Substantial Risk	4.8%	2.8%	8.0%
Above Average Risk	12.2%	8.0%	19.6%
No Risk	51.4%	61.6%	34.1%
Age	54.7	59.9	46.0
Short Horizon	26.0%	26.8%	24.6%
< High School grad.	21.0%	24.3%	15.3%
High School grad.	26.3%	24.7%	24.6%
At least some college	52.7%	49.1%	58.8%
Separated	7.1%	5.5%	9.8%
Divorced	27.5%	28.3%	26.1%
Widowed	32.3%	41.5%	16.6%
Never married	33.1%	24.5%	47.5%
Hispanic	2.5%	1.9%	3.6%
Black	13.0%	13.7%	11.8%
White	81.2%	81.5%	80.7%
Other Race	3.3%	2.9%	3.9%

All continuous variables (not presented as percentages above) were calculated using the average of the mean drawn from each of the five imputations, a procedure described in Montalto and Sung (1996). Values in parentheses are proportion of men, women or entire sample holding the asset.

compared to \$36,091 held by men. Only 8% of the women invested in business assets versus 26.5% of men. Women had slightly fewer assets in their own homes than men, but a greater percentage of single women invest in their own homes than single men. The total financial assets of women in this sample were \$56,679, while men

held financial assets of \$93,775. Because women held fewer financial assets than men, the amount invested in each asset category represents a higher proportion of their portfolios. The differences between the amounts invested in CDs and homes may appear to be trivial, but the proportion of women's portfolios represented by these assets are vastly different. Comparing the average portfolio for men to that of women shows that women held over 11% of their financial assets in CDs versus only 6% for men. Furthermore, homes and CDs constitute nearly 40% of total assets for women, and only 25% of total assets for men.

Men had greater assets and net worth than women in the sample. Mean net worth for women was \$119,320, compared to \$187,707 for men. Taxable income was \$20,220 for women and \$33,638 for men. Women were older than men in the sample. The mean age for women was 60, compared to 46 for men. Women had fewer years of education than men, had been employed fewer years with their current employer, were more often divorced or widowed, and a smaller proportion were employed full-time. A greater proportion of women than men had received an inheritance and a larger proportion of men were expecting an inheritance.

Given the wide range of differences between portfolio allocations, wealth, attitude toward risk, investment horizons and individual characteristics of men and women in the sample, there was surprisingly little difference between the determinants of investing in stocks and CDs between men and women. In fact, when the sample was combined, and the proportion of financial assets in stocks and CDs modeled, the gender dummy variable was not significant. In the models of investment choice shown in Table 2, both men and women appeared to prefer stocks over CDs as net worth grew, and men invested significantly less than women in CDs as net worth grew. Women expecting inheritances invested more in stocks than men. Women were also investing more in stocks as net worth increased and as job tenure increased, however, these factors were not significantly different for men and women. Women invested less in stocks if they had not finished high school. Men were more likely to invest in stocks if they self-identified as substantial risk takers, were older, and had some college education.

The reasons men and women invest more in CDs were remarkably similar between men and women. Divorced led to fewer resources placed in CDs while expecting an

**Table 2**

Tobit Parameter Estimates for Determinants of Investing in Stocks and CDs

Variable	Stocks		CDs	
	Women	Men	Women	Men
Intercept	-0.593**	-1.266**	-0.938**	-1.477**
Net Worth	1.13E-8**	6.70E-9	<b>-4.43E-9</b>	<b>-8.04E-8**</b>
Income	-2.68E-8	-3.03E-8	-3.42E-8	4.47E-7
Years Employed	0.007*	0.002	0.004	-0.002
Employed Full-time	-0.130	-0.029	-0.264**	0.181
Received Inheritance	0.104	0.100	0.017	0.103
Expecting Inheritance	<b>0.267**</b>	<b>-0.003</b>	0.413**	0.283**
Substantial Risk	0.087	0.312**	0.194	-0.183
Above Average Risk	-0.121	0.096	0.034	-0.005
No Risk	-0.124	-0.272**	-0.230**	0.053
Age	0.040	0.013**	0.016**	0.017**
Short Time Horizon	-0.099	-0.045	-0.125	-0.236
No High School	-0.203*	0.104	-0.227*	-0.060
College	0.097	0.343**	-0.170*	0.088
Separated	-2.851	0.048	-3.635	-0.373*
Divorced	-0.070	-0.016	-0.362**	-0.321**
Widowed	0.001	-0.080	-0.141	-0.144
Hispanic	-2.865	-3.038	-3.503	0.070
Black	-0.209	-0.436*	-3.582	-3.087
Other Race	-2.810	-0.125	0.174	0.441**
Log Likelihood	-163.98	-162.47	-186.79	-103.94
Likelihood Ratio Test		29.14		29.72

Coefficients in bold lettering were significantly different between men and women at  $p < .1$ . Individual coefficients significantly different than zero indicated by \*  $p < .05$ , \*\*  $p < .01$

inheritance and age increased CD investment for both groups. Men invested significantly less in CDs as net worth increased and, surprisingly, women who self-identified as risk averse were found to be investing less in CDs. Furthermore, women with less than a high school education were investing less in CDs. This could reflect a pattern of women deciding to use CDs as more of a cash management tool than an investment vehicle.

The contrast between men and women was greatest when modeling the proportion of total assets in housing and businesses. The separate models for men and women are shown in Table 3. When the sample was combined, the gender dummy was significant in both the housing and

business model. In the separate gender models, widowed women were more heavily invested in both housing and businesses than widowers, likely a result of previous joint decisions made with men. If women had received an inheritance, they were more heavily invested in their personal residence, and less invested in business assets when compared to men. Women with a short time horizon were less invested in housing than men, and investment in business assets grew with net worth more rapidly for women than for men.

Women were more heavily invested in housing if they had experienced marital dissolution and were older. Women were less invested in housing if they did not have a high school education and had a higher net worth. Older, risk averse, employed men tended to invest more in housing than other men, while expecting an inheritance and being Hispanic led to less investment in housing assets. Risk averse women held fewer business assets, while risk seeking men held significantly more business assets. Men also held more business assets if they were divorced, expecting an inheritance or employed.

Overall, the differences between the investment decisions of men and women were greatest when comparing housing and business as a proportion of total asset. A likelihood ratio test for differences in the overall determinants of asset allocations between men and women support this notion. The null hypothesis that the overall determinants of investment decisions were the same for men and women was not rejected for the stock and CD models, but it was rejected for the housing and business asset models.

**Implications and Conclusions**

This study supports previous studies which found that women invest in less risky assets than men. The descriptive analysis of single men and women showed that women self-identify as far more risk averse and hold significantly fewer risky assets. However, in the sample of singles drawn from the 1995 Survey of Consumer Finances, gender did not prove to be the critical determinant of investment choice. In fact, there was no difference in investment patterns in financial assets attributable to gender. Instead, differences in purely financial investment decisions between men and women appeared to be more a result of differences in wealth as measured by net worth and the expectation of an inheritance.

**Table 3**  
Tobit Parameter Estimates for Determinants of Housing and Business Investments

Variable	Houses		Business Assets	
	Women	Men	Women	Men
Intercept	-0.537**	-0.254*	-0.434	-0.825**
Net Worth	-9.48E-9**	-2.25E-9	<b>-2.35E-8**</b>	<b>4.14E-9</b>
Income	-1.34E-8	1.02E-8	3.08E-9	7.67E-9
Years Employed	0.007*	0.006**	0.003	-0.012**
Employed Full-time	-0.190**	-0.002	-0.060	0.137
Received Inheritance	<b>0.156*</b>	<b>-0.002</b>	<b>-0.252**</b>	<b>0.081</b>
Expecting Inheritance	-0.132	-0.144*	0.132	0.209**
Substantial Risk	-0.011	-0.058	0.040	0.390**
Above Average Risk	-0.101	-0.054	0.005	-0.015
No Risk	0.066	0.119*	-0.346**	-0.061
Age	0.008**	0.005*	<b>0.009</b>	<b>0.005</b>
Short Time Horizon	<b>-0.128</b>	<b>0.017</b>	-0.248	-0.077
No High School	-0.136*	0.007	-3.290	-0.269
College	-0.067	0.038	0.093	-0.006
Separated	0.046	-0.054	0.116	-0.052
Divorced	0.160*	0.090	0.196	0.160*
Widowed	<b>0.220*</b>	<b>-0.017</b>	<b>0.597**</b>	<b>-0.044</b>
Hispanic	0.097	-0.345*	-3.557	-0.021
Black	0.030	-0.042	-0.381	-0.021
Other Race	<b>0.253*</b>	<b>-0.192</b>	-3.397	0.024
Log Likelihood	-352.71	-247.37	-89.99	-177.83
Likelihood Ratio Test		32.86*		68.00**

Coefficients in bold lettering were significantly different between men and women at p<.1. Individual coefficients significantly different than zero indicated by \* p<.05, \*\*p<.01.

While the CD and stock investment decision did not appear to be independently impacted by gender, the allocation of total assets toward housing and businesses

did appear to be at least partially determined by gender. Men and women did appear to make investment in housing and business decisions differently. Women were investing more in houses if they had received an inheritance, had a short time horizon, and were widowed and they invested more in businesses if they were widowed, had not received an inheritance, or were wealthy.

By analyzing the decisions of only single men and women, the impact of gender on investment decisions becomes more clear. While it is important for investment advisors to understand the interactive nature of investment decisions made in families, it is equally important to understand the independent process used by nearly 30% of American households, which are single-person households. These single-person households do not benefit from the natural diversification that comes with combining two or more portfolios or two decision making strategies, nor do singles benefit from a range of attitudes toward risk within the decision making unit. A risk averse woman may choose an aggressive investment strategy if her partner's asset mix is, in her view, too conservative to attain long-term financial goals, but single women do not have that option. Furthermore, single women are known to have greater long-term financial needs which must be met with their investments. The only way to offset higher needs and lower lifetime earnings is through investment in assets with higher long-run expected returns.

Investment advisors may feel overly challenged by the need to convince risk averse investors that their long-term financial interest is protected by choosing more volatile investments. In light of recent studies which find women to be more risk averse, advisors may be reluctant to place a single woman's assets in higher risk investment instruments. This study could dispel some of these concerns, as it has been shown that single men and women generally use the same decision-making process when it comes to investing.

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## CONTENTS

Optimal Life Cycle Savings

Perceived Adequacy of Retirement Income

Retirement Preparation of Older and Younger Baby Boomers

Should You Retire at Age 62 or 65?

Justifying the Use of Economic Insights in Ordinary Decisions

The Impact of Salary Growth, Inflation, Employee Age, and Career Length on the Relative Desirability of Pension Fund Type

Economic Adjustment Strategies of Farm Men and Women Experiencing Economic Stress

Discriminating Between Primary Family Financial Managers and Other Adults in the Family

First-Time Homebuyers Programs as an Impetus for Change in Budget Behavior

The Operations, Appeals and Costs of the Alternative Financial Sector: Implications for Financial Counselors

Patterns of Household Financial Asset Ownership

Determinants of Family Bond and Stock Holdings

Valuing a Constant-Growth Annuity: An Applied Approach Using a Financial Calculator

Patterns of Adequate Household Emergency Fund Holdings: A Comparison of Households in 1983 and 1986

Comparison of Financial Well-Being of Older Women: 1977 and 1989

Households with Rent Burdens: Impact on Other Spending and Factors Related to the Probability of Having A Rent Burden

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