

Do Individuals Know How Much They Are Worth?

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How accurate are individuals' perceptions of their wealth holdings? Data from the National Longitudinal Surveys show approximately 70% of all respondents believe they hold far less and 25% believe they hold far more wealth than they actually possess. For every dollar of wealth owned, typical individuals believe they hold only 62 cents. Increasing an individual's wealth by one dollar raises perceptions by just 27 cents. Most individuals need to calculate their net worth to correct their perceptions. Results show older individuals have a smaller perception gap than younger individuals, and Blacks and Hispanics have a higher perception gap than whites.

Key Words: *Net worth, Perceptions, Attitudes, National Longitudinal Survey*

Introduction

How much are you worth today? Much financial advice and research implicitly assumes individuals answer this question accurately. Using a number of very large surveys of the U.S. population this paper investigates the accuracy of responses to this simple question. As with Goetzmann and Peles (1997), which found large errors in investors' perceptions of their mutual fund returns, and Gustman and Steinmeier (1999), which found large errors in older workers' perception of their pension's size, this research finds that individuals have massive and consistent errors in estimating their net worth.^a The results show few individuals estimate their net worth accurately.

Net worth misperceptions have potentially important ramifications for practical, empirical and theoretical reasons. Financial planners consistently stress the first practical step to obtaining financial security is understanding your current assets and liabilities (Prather, 1990). Planners generally recognize that many individuals do not know how much wealth they hold but, until this research, only had anecdotal evidence about the difference between people's beliefs and their actual holdings.

Financial planning books stress the practical importance of understanding your net worth. The Wall Street Journal's guide to personal finance (Wiegold, 1997) suggests readers perform the very experiment done here. Before leading the reader through the steps of creating their personal net worth they state, "Many people have no idea what they are worth. You might jot down a top-of-your-head guess before you proceed." This paper empirically confirms that a top-of-the-head guess is not even close for many people. Another

popular book on money management is written by Jane Bryant Quinn (1997). In her book net worth calculations are relabeled "keeping score" but the concept that all individuals need to keep score (and that few actually do) is the same. Davis and Prochaska-Cue (1993) surveyed households in Kansas and found that only half of the respondents estimated their net worth. The two most common reasons for not estimating was that the idea had never occurred to the individual or they saw no need for estimating their net worth.

Individuals need to know their net worth in order to accurately plan a savings and investing strategy for major life events like retirement (Yuh, Montalto & Hanna, 1998; DeVaney, Sharpe, Kratzer & Su, 1998). The media are filled with advertising and information campaigns designed to increase retirement savings. These campaigns are met with popular support since many individuals are both worried about the potential future insolvency of Medicare and Social Security and worried that they have not saved enough funds for retirement (Moore & Saad, 1995; Banks, Blundell & Tanner, 1998). This research shows that many individuals are underestimating their wealth holdings and are actually better prepared for retirement than they think.

Finance and wealth researchers will also find this work important. In the past few years, U.S. micro wealth estimates have been produced for the entire population (Kennickell, Starr-McCluer & Surette, 2000; Kennickell, Starr-McCluer & Sundén, 1997), the very richest U.S. individuals (Wolff, 1998) and for young baby boomers (Zagorsky, 1999). These estimates are intended to accurately portray "true" or actual wealth holdings. If individuals, however, base economic decisions on their *perceived* wealth values instead of their

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actual values then they will make incorrect spending and investment decisions.

A very simple example describes this problem. Assume someone holds \$300,000 of wealth but perceives their net worth as \$200,000. If they decide to spend 5% of their wealth each year they will spend only \$10,000 a year ($\$200,000 \times 5\%$) instead of \$15,000 a year ($\$300,000 \times 5\%$). Biased perceptions reduce spending by \$5,000. Misperceptions can also alter investment decisions. If people buy stocks, bonds or mutual funds only when they believe they are “wealthy” then misperceptions will keep many people out of the market who actually have the financial means to participate.

Beyond empirical issues, much theoretical work assumes that individuals maximize consumption subject to their wealth and income (Deaton, 1992).^b While some models include uncertainty about the future values of income and wealth, the implicit modeling assumption is that individuals know current and past values of their income and wealth accurately. This research shows this key point is not true and suggests theorists rethink a basic consumption model assumption.

This research determines how well individuals know their net worth using data from the National Longitudinal Surveys (NLS). In selected surveys during the 1990s respondents were asked how much they believed they were worth after paying off all debts. During these same surveys each respondent also answered detailed questions about their financial, non-financial and debt holdings. This paper compares each respondent’s belief about their net worth with the net worth value calculated from the detailed wealth questions to assess the accuracy of an individual’s wealth perceptions. The results from this comparison show that while some individuals over-estimate, most people believe they have far less wealth than they actually possess. For every dollar of wealth owned, the average individual believes they only hold 62.5 cents of wealth. Moreover, increasing an individual’s wealth by one dollar raises his wealth perception by only 27.4 cents.

The rest of this research is as follows; section two describes the data and then section three compares the two net worth measures. Section four measures the relationship between perceived and calculated wealth. Section five checks if these wealth misperceptions are real or just data set artifacts. Section six examines if these misperceptions are related to demographic factors like age or sex. Lastly, a conclusion summarizes the paper and suggests areas for future research.

Description of Data

Accumulating, spending and dreaming about wealth is a primary focus for many individuals.^c While wealth is clearly on people’s minds an important economic question is, do people know how much they are worth? This section suggests a significant fraction do *not* know their own net worth. Individuals, from three cohorts of the National Longitudinal Surveys (NLS), provide biased estimates of their own wealth.

Household surveys interested in wealth have used primarily two methods for measuring net worth. The first method asks respondents to just state their total net worth. This provides the individual’s perception of net worth, and should represent the amount they use when making economic decisions. The other method asks respondents if they own specific assets or have specific liabilities. Then for each applicable category the interviewer asks them the asset or debt’s value. Total net worth is then calculated after the interview by summing the answers from each category.

This second method is important for accurately measuring total wealth because the first method, which asks respondents to simply state their net worth, is a cognitively difficult task. Armstrong, Denniston and Gordon (1975) showed that breaking down a cognitively complex question, as in the first method, into simpler components greatly increases the final result’s precision. Using this “principle of decomposition” Krosnick and Berent (1993) showed breaking hard survey questions into simpler pieces leads to more accurate results which stay consistent from survey to survey. The decomposition principle is used extensively by the Federal Reserve Board’s Survey of Consumer Finances, the nation’s premier wealth survey, which breaks asset and liability questions down into very fine categories.

During the 1990s eight NLS surveys asked respondents questions about how much wealth they thought they held, and detailed questions designed to capture the exact values of all their assets and liabilities. While the NLS does not provide any way to independently assess the accuracy of wealth answers, the decomposition principle research discussed above strongly suggests that the detailed questions produce more accurate net worth values than asking individuals for their perceptions. The next sub-sections give both a detailed NLS data overview and an explanation of how the wealth measures were computed.

A. NLSY79 Data

The primary data set used in this research is the National Longitudinal Survey of Youth 1979 cohort (NLSY79). In 1979, the U.S. Department of Labor began funding a nationwide panel survey of young adults to better understand school-to-work transitions. This first survey interviewed 12,686 young baby boomers, individuals born between 1957 and 1964. Subsequent surveys provide the particulars on how these individuals' lives change over time. Full details about the survey are found in Zagorsky (1997). The NLSY79's primary focus is not tracking wealth but instead the employment, training and educational attainment of the respondents. Additionally, the survey records a variety of other information, useful for understanding wealth such as military (ASVAB) test scores, receipt of government assistance, and fertility measures to cite only a few topics.

The survey is primarily conducted as face-to-face interviews. This paper focuses on the NLSY79 wealth modules, asked in surveys conducted from 1990 to 1996. Zagorsky (1999) analyzes the data and explores the questions found in these modules in greater depth.

A wealth module was first added to the NLSY79 in 1985, when the youngest respondent was 21 years old. The module follows a simple pattern: Respondents are first asked if they own an asset or have a debt. If they answer yes, the interviewer asks them to state the exact amount or value. Respondents answer questions about home ownership, cash savings, farm, business and real estate holding, vehicles, possessions, major debts, trusts, stock, bond, options and mutual fund holdings. Questions were added in 1994 to measure certificate of deposit holdings and retirement accounts such as IRAs, 401Ks and 403Bs. Beginning in 1994 the NLSY79 switched from interviewing respondents every year to every other year to lower the survey's cost and reduce respondent burden.

This research begins in 1990 when the NLSY79 survey expanded the wealth module to include questions on the respondent's net worth self-perception. These new questions asked each respondent to participate in a small thought experiment. The experiment imagines selling all "major possessions including your home, turn all of your investments and other assets into cash, and pay all of your debts." Respondents are then asked if they would be in debt, break even or have money left. If the respondent states they have money left over, they are asked how much money. The primary drawback to the perceived worth questions are that individuals with a negative net worth perception are not asked the specific amount. Over the eight surveys analyzed this results in 5% of the respondents not

being classified. Future research will analyze this remaining group since this data restriction was removed in the 1998 NLSY79 survey and 1997 Mature Women and Young Women surveys.

B. NLS of Mature and Young Women

The other survey data used in this research are the NLS of Mature and Young Women. While the NLSY79 has much more data pertinent for understanding wealth misperceptions, this research includes the two cohorts of women to check if wealth misperceptions are confined to just young baby boomers or are a phenomena found across the age and wealth spectrums. Unfortunately, since neither the NLS of Mature or the NLS of Young Men asked both types of wealth questions, it is impossible to check the extent of misperceptions among males over 40.

The Mature Women's cohort was started in 1967 by the U.S. Department of Labor to understand how women aged 30 to 44 reentered the work force after raising their children. The Young Women's cohort (ages 14 to 24) was started a year later to understand the choices made by teenage women as they left school, started families and began college. Slightly more than 5,000 women participated in the first survey for each group.^d To date, the U.S. Census Bureau has interviewed the Mature Women's cohort eighteen times and the Young Women's cohort nineteen times.

Wealth modules are periodically inserted into both Women's surveys. These modules are very similar in style to NLSY79 modules. The Women's wealth modules were expanded to include the self-perceived net worth questions beginning in 1993 for the Young Women and in 1995 for the Mature Women.^e While the self-perception questions are the same as found in the NLSY79, the detailed wealth questions are slightly different. In 1995 neither Women's survey included questions asking for information on the value of possessions, such as jewelry or fine furniture. Additionally, the women were not asked if they held certificates of deposit (CDs).

The 1995 women's questionnaires, however, contain five additions not found in the NLSY79. First, women were asked if they or their husbands held any savings bonds and if so, the bonds' value. Second, women were asked if they held any life insurance and the surrender value of all their policies. Third, women were asked the amount of personal loans made to friends, family or others individuals. Fourth, instead of asking women to mentally consolidate farm, business and other real estate values, the Women's questionnaires ask about each type of holding individually. Lastly, respondents refusing or not knowing an exact amount are led through a series of questions which unfold or bracket the amount's

value.^f

Except for three differences, the 1993 Young Women's wealth module is identical to the one asked in 1995. The 1993 module does not contain unfolding brackets to obtain wealth estimates from women who refuse or do not know specific amounts. Second, respondents were not asked questions about their life insurance surrender value. Lastly, women were not asked to report the value of their IRA accounts.

Wealth Comparisons

The key comparison in this paper is between perceived and calculated net worth. Computing perceived net worth is very simple. Individuals who stated they had no wealth were given a perceived worth of zero. Individuals who stated a specific perceived wealth figure were given that value. The more complicated problem is constructing a calculated net worth value for each individual. In general the calculated net worth value for each NLS respondent is created by summing all the asset answers in each wealth module and subtracting from that total all the debt answers. Details of constructing the calculated net worth series are partially described in the appendix and more completely described in Zagorsky (1999). This section analyzes the data using these two different wealth measures and finds that most individuals perceive they hold far less wealth than the sum of their disaggregated answers.

Figure 1 provides a direct comparison of calculated and perceived net worth for the NLSY79 1996 survey. To make important details for the majority of respondents visible, the small number of respondents whose calculated or perceived net worth is greater than one million dollars are excluded from the graph. Removing these outliers prevents the graph from fusing together most points below a million dollars.

The graph's persistent vertical clumping shows many respondents answer the perception questions using round numbers like \$50,000, \$100,000 and \$250,000, not exact answers. The graph includes a 45° line, showing where calculated net worth is identical to perceived. The fact that few respondents are either on or close to this line clearly reveals most individual's perceptions do not match their disaggregated statements. More importantly, since the majority of points are above the 45° line most individual's calculated net worth is larger than their perception.

To quantify the information presented in Figure 1 the difference between calculated and perceived net worth was calculated in 1995 dollars for all eight surveys. Table 1 reveals the gap between perceived and calculated net worth

for both the NLSY79 and Women's cohorts. Overall, two out of three (67.7% average) young baby boomers underestimate their wealth holdings, one out of twenty (5.6% average) match and about one in four (26.6% average) overestimate.^g The Women's cohorts reveal an even larger wealth misperception. Overall, the table's right hand side shows that almost three quarters of the women (72.8% and 74.1% Young; 73.2% Mature) underestimate their wealth holdings while slightly less than one quarter (23.9% and 24.2% Young; 23.2% Mature) over estimate.

Moreover, the table points out two significant trends. First, reading the line labeled *Total Percentage Who Underestimated* from left to right, shows that as individuals age the percentage underestimating their wealth increases. Second, this underestimation is not confined to small dollar amounts. Averaging the top two rows shows that 5.1% of young baby boomers and 16.8% of the women underestimate their wealth by more than \$100,000. Relatively fewer make the opposite mistake since the table's bottom rows show only 1.1% of young baby boomers and 4.2% of the women overestimated their wealth by \$100,000, so that women were four times as likely to underestimate as they were to overestimate their wealth.

Table 1, which records absolute amounts, potentially provides a biased view since for very rich individuals a small percentage difference between calculated and perceived wealth could result in a large absolute deviation. Following Prather (1990) who analyzed net worth in ratios instead of absolute amounts, this bias is eliminated by examining perceived wealth as a percentage of calculated wealth. Table 2, by using a ratio, counts poor and rich individual's misperceptions alike.

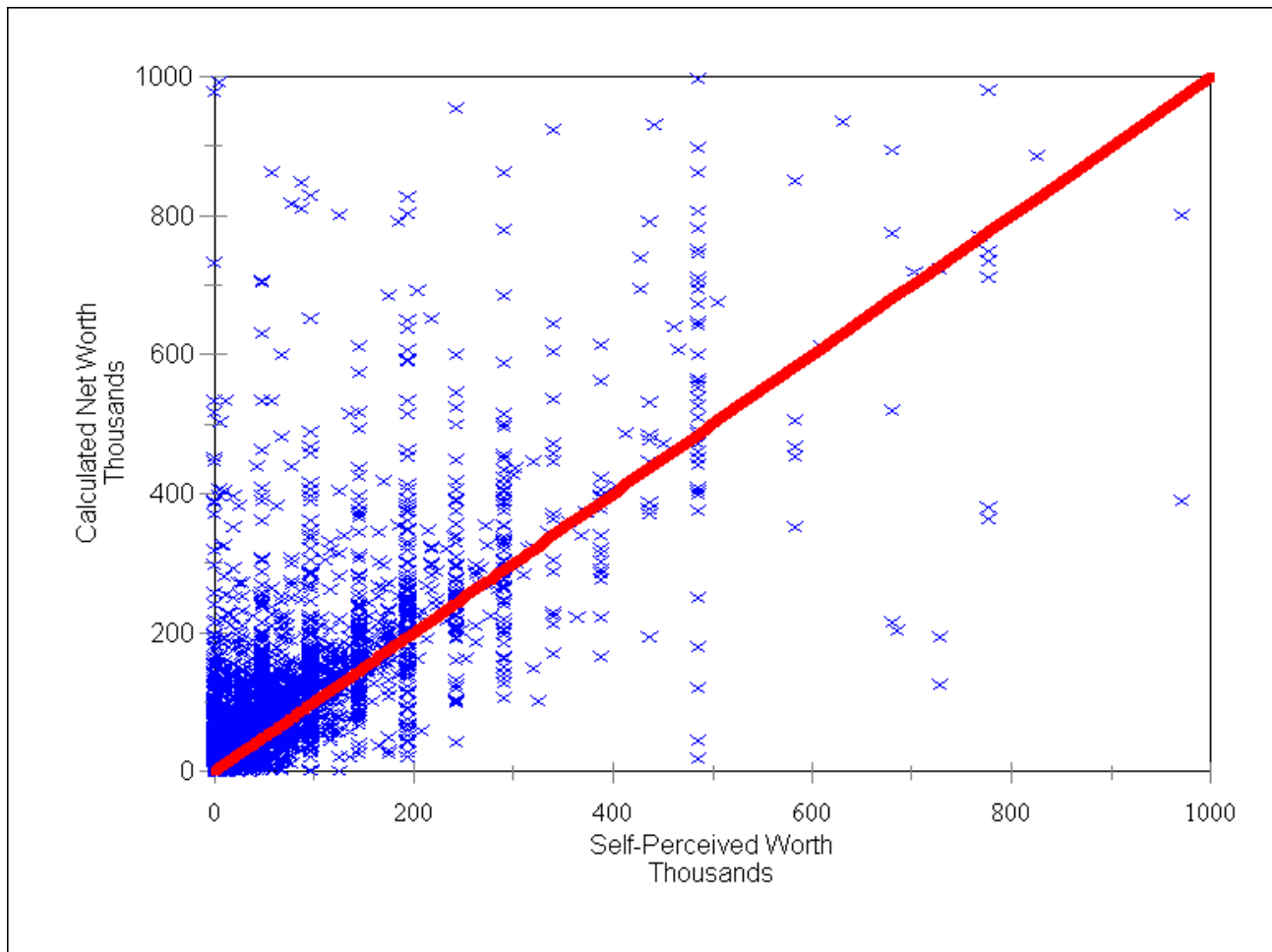
The table shows in the seventh line, labeled *90-110% Of Calculated Wealth*, that on average only 17.3% of young baby boomers had a gap between their calculated and perceived net worth estimates of less than 10 percentage points. Combining the first four rows shows on average over a third (36.4%) of young baby boomers underestimate their calculated wealth by more than 50%. Combining the last four rows shows that a much smaller percentage of young baby boomers overestimate their calculated wealth by 50% or more (10.1%).

The Young Women's cohort shows an even larger deviance than young baby boomers. Combining the first four rows shows on average over a third (37.8% and 41.6%) of the Young Women underestimate their calculated wealth by more than 50%. Combining the last four rows shows few Young Women overestimate their calculated wealth by 50% or more

(9.0% and 8.7%). The percentage of Mature Women who are both underestimators (31.5%) and overestimators (5.7%) are a much smaller group than among the Young Women.

Overall, the ratio results in Table 2 suggest an even larger problem of wealth misperception than the absolute amounts in Table 1. Both tables, however, clearly show typical individuals underestimate their wealth holdings. The next section checks if being rich or poor is related to these misperceptions.

Figure 1
Calculated Versus Perceived Net worth for the NLSY79 1996 Survey.



Self Perceptions Relation To Wealth

Are self-perception errors related to the amount of wealth

held? Recently spectacular growth has occurred in U.S. average wealth holdings. If mismatches are systematically

related to wealth then many individuals whose wealth has increased will not perceive this growth. The simplest method of answering the question is to regress calculated wealth on perceived wealth. A coefficient of 1.0 means that when calculated net wealth changes, the individual's perception changes by an identical amount. A zero coefficient means changes in calculated net wealth have no effect on perceived net worth while a coefficient greater than 1.0 means that any calculated wealth gains cause perceptions to expand even faster.

The results from running the regressions are reported in Table 3's third column. Overall, every coefficient is well below 1.0. This means that individuals perceive only a portion of their calculated wealth increases. The first eight regressions represent how much perceived net worth differs between individuals given a difference in calculated net worth.^b For example, the first regression coefficient states that if two typical NLSY79 respondents in 1990 had calculated net worth that differs by \$1,000 their beliefs differ by only \$541.

By examining the same individual over time, demographic, social and other factors are held constant. Regressions 9 to 13 rerun the regressions except they use survey-to-survey changes in perceived and calculated wealth for each individual.

Focusing on individuals' changes and holding other factors constant dramatically reduces the coefficient. For example, the \$0.251 coefficient in regression 9 means that increasing the typical NLSY79 respondent's calculated wealth by \$1,000 from 1990 to 1992 raises their self-perception by only \$251. Averaging the five regression coefficients (lines 9 to 13) results in a value of only \$0.274. This value is less than half the value found in the first set of regressions comparing perceptions among different individuals. This value means that as individuals grow wealthier they perceive only slightly more than one quarter of their wealth growth.

The other regressions show this large gap is replicated in other surveys and cohorts. Reading down the column of regression results suggests as individuals age the gap in beliefs shrinks slightly with the coefficients trending upwards toward a maximum of 77.2¢ for the 1995 Mature Women. Nevertheless, even focusing on just the largest coefficient means that almost one quarter of calculated wealth changes are not perceived. Averaging the coefficients across all eight surveys results in a figure of 62.5¢, which means that if two individuals have a \$1,000 calculated difference in wealth their perceptions will differ by only \$625.

The first eight wealth regressions are conceptually problematic since they implicitly assume individuals are homogenous and that wealth differences do not vary based on demographic characteristics. Instead of comparing one individual with another, a better comparison examines how the same individual changes his beliefs over time.

Table 1
Perception Gap In Absolute Dollars. (Weighted, In 1995 Dollars)

Difference In Dollars	NLSY 1990	NLSY 1992	NLSY 1993	NLSY 1994	NLSY 1996	Young Women 1993	Young Women 1995	Mature Women 1995
More Than \$250,000 underestimate	1.1	1.3	1.3	1.2	2.4	3.3	8.9	5.1
\$250,000 to \$100,000	2.7	2.9	3.2	3.4	5.9	7.2	12.8	13.2
\$100,000 to \$50,000	5.0	5.4	6.3	7.9	9.8	11.4	13.1	13.4

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\$50,000 to \$20,000	11.4	13.3	15.0	16.2	17.7	20.8	16.4	18.1
\$20,000 to \$10,000	11.1	11.2	13.0	13.2	11.7	10.8	8.7	8.4
\$10,000 to \$5,000	10.7	11.0	9.2	9.7	9.1	7.1	5.4	6.6
\$5,000 to \$1	22.7	20.6	19.4	17.2	15.5	12.2	8.8	8.4
<i>Total Percentage Who Underestimated</i>	64.7	65.7	67.4	68.8	72.1	72.8	74.1	73.2
<i>No Difference</i>	5.6	6.0	6.4	5.5	4.5	3.3	1.6	3.5
\$1 to \$5,000 overestimate	15.4	13.3	11.5	11.0	9.3	5.4	4.1	4.1
\$5,000 to \$10,000	4.6	4.9	4.4	4.1	3.5	3.1	3.3	2.5
\$10,000 to \$20,000	3.7	3.5	3.7	3.7	3.4	4.3	3.4	3.5
\$20,000 to \$50,000	3.5	3.9	3.8	3.7	3.8	4.7	5.4	5.0
\$50,000 to \$100,000	1.4	1.5	1.6	1.9	2.0	3.1	3.9	3.0
\$100,000 to \$250,000	0.8	0.9	0.8	1.0	1.1	1.8	2.5	2.4
More Than \$250,000	0.2	0.2	0.3	0.1	0.3	1.5	1.6	2.7
<i>Total Percentage Who Overestimated</i>	29.6	28.2	26.1	25.5	23.4	23.9	24.2	23.2

Notes: First 5 columns are based on data from the NLSY79. Last 3 columns are based on data from the NLS of Mature and Young Women. Values in the table are calculated by solving for all respondents with valid data the equation; Difference = Calculated Net worth - Perceived Net worth.

Table 2
Perceived Net Worth as Percentage of Calculated Net Worth. (Weighted Percentages)

Perceived Net worth Is	NLSY 1990	NLSY 1992	NLSY 1993	NLSY 1994	NLSY 1996	Young Women 1993	Young Women 1995	Mature Women 1995
0% Of Calculated Wealth	14.7	15.0	13.9	14.7	14.5	20.5	15.8	15.3
1%-9% Of Calculated Wealth	3.1	2.9	3.1	2.8	3.1	1.9	4.8	2.0
10%-29% Of Calculated Wealth	7.9	8.1	8.1	8.4	9.5	6.4	10.2	4.4
30%-49% Of Calculated Wealth	9.6	9.4	10.2	10.5	12.6	9.0	10.8	9.8
50%-69% Of Calculated Wealth	11.6	11.8	13.1	13.7	13.6	11.6	12.9	13.5
70%-89% Of Calculated Wealth	13.8	13.7	14.8	14.6	14.4	18.0	14.4	18.7
90-110% Of Calculated Wealth	18.1	18.5	17.8	16.4	15.6	15.1	13.3	20.3
111%-130% Of Calculated Wealth	6.8	6.8	6.1	6.0	5.5	6.0	6.0	7.3
131%-150% Of Calculated Wealth	2.9	2.9	3.1	3.3	2.6	2.5	3.2	2.9
151%-170% Of Calculated Wealth	2.7	2.6	2.3	2.3	1.9	1.7	1.8	0.9
171%-190% Of Calculated Wealth	1.5	1.1	1.3	1.1	1.0	0.9	1.7	1.1
191%-200% Of Calculated Wealth	0.8	0.9	0.8	0.7	0.7	0.7	0.7	0.6
More Than 200%	6.5	6.3	5.3	5.6	4.9	5.7	4.5	3.1

Notes: Individuals with numbers under 100% are under-estimators, while those over 100% are over-estimators. The first 5 columns are based on data from the NLSY79. Last 3 columns are based on data from the NLS of Mature and Young Women.

Table 3
Coefficients From Regressions of Calculated on Self-Perceived Net Worth

Regression Number	Survey	Coefficient (std. error)	R ²	N
(1)	NLSY79 1990	\$0.541 (0.007)	0.502	6430
(2)	NLSY79 1992	\$0.550 (0.007)	0.531	6174
(3)	NLSY79 1993	\$0.608 (0.006)	0.601	6817
(4)	NLSY79 1994	\$0.651 (0.006)	0.637	6879
(5)	NLSY79 1996	\$0.575 (0.006)	0.586	6627
(6)	Young Women 1993	\$0.696 (0.012)	0.646	1707
(7)	Young Women 1995	\$0.610 (0.013)	0.535	1864
(8)	Mature Women 1995	\$0.772 (0.014)	0.660	1492
(9)	Δ in NLSY79 90-92	\$0.251 (0.009)	0.145	4671
(10)	Δ in NLSY79 92-93	\$0.239 (0.010)	0.103	5097
(11)	Δ in NLSY79 93-94	\$0.325 (0.011)	0.144	5672
(12)	Δ in NLSY79 94-96	\$0.327 (0.009)	0.188	5469
(13)	Δ in Young Women 93-95	\$0.226 (0.019)	0.115	1110

Notes: Regressions 1 to 8 were done on the equation: Perceived Net worth = constant + α Calculated Net worth. The third column reports the values of α. The α coefficients reported in regressions 9 to 13 are from a similar equation except that both net worth measures were calculated as the difference in their respective measure from one survey to the next. Each coefficient is significantly different from zero at the .001 level or better.

Every regression in Table 3 shows that increases in calculated wealth are not matched by increases in the typical person's wealth perceptions. This suggests most of the recent rapid rise in U.S. wealth holdings is not being perceived by many individuals benefitting from the increase.

Are Wealth Misperceptions Real?

While the previous sections clearly show most individual's perceived net worth is vastly different from their calculated net worth, is the gap between perceived and calculated net worth real or just an artifact? For example, if most respondents were confused over the thought experiment's directions the gap would be an artifact. This section investigates a large number of reasons that potentially explain the gap and find none match the data. While it is impossible to prove the gap is not an artifact, the large amount of evidence strongly suggests the gap is real.

Interviewer feedback suggest respondents are not confused about the thought experiment. At the end of the survey, NLSY79 interviewers fill in their own questionnaire. One key item asks the interviewer to list all questions the respondent had difficulty answering. This guides NLS staff in revising future questionnaires. Field responses have not revealed difficulties in answering the perception questions. Moreover, because NLSY79 respondents easily answered these questions they were added without changes to the

Women's surveys.

Another potential explanation is that NLS questionnaires do not include enough asset or debt questions. Missing a major wealth category used by respondents when they mentally calculate their perceived net worth could cause a significant bias to arise between calculated and perceived totals. Since most individuals underestimate their calculated net worth this means the questionnaire is potentially overlooking important liabilities.

All NLS wealth sections directly capture key liabilities such as home mortgages, car loans and debts associated with business, farm and investment real estate. To capture liabilitiesⁱ beyond these categories, the end of each wealth section asks, "Aside from any debts you have already mentioned, do you [or your husband/wife] now owe over \$500 to any stores, doctors, hospitals, banks or anyone else?" While this question is intentionally broadly worded some respondents may not understand that they should report the sum of *all* their outstanding liabilities. For example, people with significant credit card debt may ignore educational loans when answering this question. Examining the data shows missing liabilities can not explain the misperception gap. Almost two thirds (63.2%) of respondents in all 8 surveys who underestimated their calculated net worth state in this question that they have *no* other outstanding debts.^j

Another potential reason is that individuals may not be mentally ready to answer a question about perceived wealth. This reason is doubtful because the self-perceived questions are asked at the wealth section's end, after the respondent has been cognitively prepared by the large number of disaggregated questions. Additionally, each NLS questionnaire is extremely similar to the previous questionnaire. Each time a survey is fielded most respondents are able to anticipate the format, style and order of questions. In five out of the eight surveys analyzed respondents had heard the self-perception question previously and probably anticipated the question.

Another potential explanation is that poor math skills cause the gap. If individuals arrive at their self-perceived wealth by mentally summing disaggregated components then respondents with complex financial lives and poor math skills will compute a different answer than researchers using computers. NLSY79 data provide a direct method of testing this hypothesis using the Armed Services Vocational Aptitude Battery, or ASVAB test, taken by most respondents in 1980. The ASVAB is used by the military to test potential recruits' mental fitness and contains three

subtests (30% of the total) that specifically examine mathematical ability.

A simple math score was calculated for each respondent by summing the standardized score each individual received on the ASVAB's arithmetic reasoning, numerical operations and mathematics knowledge subtests. If poor math skills are causing the gap a high positive correlation should exist between the ASVAB math score and the gap between calculated and perceived net worth. Since the average correlation (-0.037) is both negative and close to zero, there is little evidence that poor math skills contribute to the perception gap.^k

Another potential reason is that respondents are loath to reveal their true assets to interviewers who are strangers. While suspicion might be an important factor, it is particularly mitigated in the NLSY79 surveys. Zagorsky (1999) shows the NLSY79 has very high response rates for four reasons. First, the NLSY79 often sends the same interviewers back year after year, contributing to a relationship of trust between respondents and interviewers. Second, since their teenage years, NLSY79 respondents have been asked about drug use, sex life and criminal activities, and have probably grown comfortable with personal questions. Third, NLSY79 respondents are paid, and some panel members may erroneously believe non-response will jeopardize this payment. Fourth, almost all interviews are done in the respondent's home. Respondents who provide wealth answers which appear out-of-place with the interview environment are expected to confirm their answers.^l Hence, it is highly doubtful that mistrust leads to biased wealth answers in the NLSY79. While the Mature and Young Women are not paid and frequently change interviewers, conversations with NLS staff suggests those with high levels of mistrust dropped out during the 1960s and early 1970s.

Selective nonresponse could also potentially cause the gap. The Mature and Young Women 1995 wealth module has higher nonresponse levels than the NLSY79. For example, 92.7% of the Young Women and 85.0% of the Mature Women stated the current market value of their homes compared to 99.7% of all NLSY79 respondents. Part of the Women's nonresponse is mitigated by bracketing questions which provide an approximate asset or liability value. Nevertheless, including missing answers only increases calculated net worth since the vast majority of missing data are unrecorded assets. Increasing calculated net worth would only make the perception gap bigger suggesting that selective nonresponse is not causing the difference.

Another potential reason is that individuals' wealth perceptions may be based on long-term beliefs, while NLS questions focus solely on current or short-term wealth. If this criticism were correct, then the gap between wealth and perception would be even bigger than shown here since all surveys except the 1995 Mature Women's survey are comprised of individuals below their peak wealth holdings.

Lastly, females could have less knowledge of the family's financial affairs than males. Whether this is true or not, there is no reason why a bias between calculated and perceived net worth should exist. If females do not know about all of the family's assets then both calculated and perceived values will be lower.

Carefully examining each of the above items suggests none explain the perception gap. While it is impossible to prove the gap is not caused by some other factor, this section suggests the gap is real.

Factors Affecting Misperceptions

Does the amount of overestimation or underestimation vary systematically with demographic factors like sex, race or age? This section, using regression analysis, examines how much standard demographic factors influence the gap between individual's perceived and calculated net worth. Overall, the findings suggest older individuals have a smaller gap than younger; Blacks and Hispanics have a larger gap than whites; and intelligence exerts little influence on the gap's size. It is important to note that the samples do not include men over 40.

Table 4 provides the specific results from running Ordinary Least Squares (OLS) regressions on each individual's perception gap, which is their calculated net worth minus their perceived net worth. The first coefficient, *Wealth*, which is each individual's calculated net worth has the most effect^m in explaining the perception gap. This coefficient ranges from 25 to 52 cents, is very highly statistically significant and shows that a dollar increase in calculated wealth increases the perception gap by an average of 55.3 cents for the NLSY79 and 34.3 cents for the Women's cohorts. Hence, these regressions show less than 60% of changes in wealth are internalized by young baby boomers and women.

The second coefficient in the table is *Income*. Every NLS survey contains a large number of questions which capture the amount of money earned, unearned and transferred to the respondent and their spouse or partner in the previous calendar year.ⁿ The negative sign on all eight income coefficients shows that increasing an individual's income

while holding wealth constant lowers their perception gap. The coefficients range from negative 5.4 cents to negative 44.5 cents, average 27.4 cents for the NLSY79, 17.3 cents for the women and are highly statistically significant except for the 1995 Mature Women regression which contains both retirees with low incomes and workers with high incomes. Holding all other factors constant, a dollar increase in income lowers the perception gap by approximately a quarter.

Since four out of five *Female* coefficients are not statistically significant, sex does not appear to matter much. However, the next lines containing race and ethnicity variables clearly do matter. The NLSY79 columns which have coefficients for both *Hispanics* and *Blacks* suggest that individuals who belong to either group have a perception gap that is more than \$4,800 larger than whites.^o Among the Women's cohorts an even larger difference appears with *Blacks* having a perception gap that is over \$21,000 larger than whites.

The last regression coefficient labeled *AFQT* are a proxy for IQ. The results from the NLSY79 are quite clear; there is no important relationship between IQ and the perception gap because the coefficient's effect is very small (average -\$53).^p

Overall, this section has shown that the perception gap varies by wealth, income, age, and race but not by intelligence and potentially not by sex. The next section summarizes the entire research and suggests areas for future research.

Concluding Remarks

Do you know how much you are worth? Comparing answers to this simple question with calculations based on respondent's answers to a large number of specific asset and debt questions shows consistent errors. Approximately 70% of all respondents believe they hold far less wealth and 25% believe they hold far more wealth than their calculations based on their specific answers show. This underestimation is not confined to small amounts since 5.1% of young baby boomers and 16.8% of older women underestimated their wealth by over \$100,000.

For every dollar of wealth owned, the typical individual believes they hold only 62.5 cents. Increasing the typical individual's wealth by one dollar changes their perceptions by only 27.4 cents. Regression results show older individuals have a smaller gap between their calculated net worth and their perceived net worth than younger individuals. Blacks and Hispanics have a higher perception gap than whites, and higher intelligence individuals have

very similar gaps to lower intelligence individuals. Overall, the answer is clearly *no* to the question “do you know how much you are worth?”

Table 4

Regressions Investigating the Gap Between Perceived and Calculated Wealth. (T-statistics in parenthesis).

	NLSY 1990	NLSY 1992	NLSY 1993	NLSY 1994	NLSY 1996	Young Women 1993	Young Women 1995	Mature Women 1995
<i>Wealth</i>	\$0.519 (69.9)	\$0.510 (69.7)	\$0.427 (63.9)	\$0.405 (57.9)	\$0.501 (71.8)	\$0.348 (24.2)	\$0.427 (28.1)	\$0.254 (16.1)
<i>Income</i>	-\$0.445 (16.7)	-\$0.285 (14.6)	-\$0.054 (4.6)	-\$0.237 (12.0)	-\$0.350 (17.3)	-\$0.254 (5.3)	-\$0.166 (3.0)	-\$0.100 (1.2)
<i>Age</i>	-\$913 (3.5)	-\$791 (3.0)	-\$695 (2.7)	-\$104 (0.4)	-\$720 (2.4)	-\$942 (1.7)	-\$2,967 (3.9)	-\$628 (1.0)
<i>Female</i>	\$798 (0.7)	\$476 (0.4)	\$1,504 (1.4)	\$1,449 (1.3)	\$4,251 (3.1)			
<i>Black</i>	\$6,460 (4.3)	\$6,530 (4.2)	\$4,790 (3.2)	\$3,298 (2.2)	\$4,830 (2.7)	\$11,827 (2.8)	\$23,254 (4.1)	\$28,399 (4.3)
<i>Hispanic</i>	\$5,083 (3.1)	\$4,038 (2.4)	\$5,698 (3.6)	\$3,449 (2.1)	\$4,108 (2.1)			
<i>AFQT</i>	\$25 (1.0)	-\$36 (1.5)	-\$120 (5.1)	-\$59 (2.4)	-\$76 (2.6)			
<i>Constant</i>	\$33,205 (3.6)	\$26,726 (2.8)	\$22,432 (2.4)	\$7,162 (0.8)	\$28,686 (2.6)	\$45,524 (1.8)	\$127,406 (3.6)	\$28,784 (0.7)
<i>R</i> ²	0.451	0.461	0.408	0.361	0.476	0.274	0.334	0.161
<i>N</i>	6,142	5,889	6,500	6,571	6,329	1674	1812	1419

Notes: *Wealth* is calculated net worth. *Income* is the summation of all money received in the previous calendar year. *AFQT* is an IQ measure and stands for the Armed Forces Qualification Test. Mature and Young Women regressions do not contain a *Female* coefficient since all sample members are female. Additionally, Mature and Young Women regressions do not have *Hispanic* or *AFQT* coefficients since data on these items are not available.

Coefficients with t values ≥ 1.96 are significant at the .05 level or better; and with $t \geq 2.58$ are significant at the .01 level or better.

Most individuals have an inaccurate idea of their net worth. By listing all of their assets and debts once each year and calculating their net worth, individuals would improve their personal financial perceptions, ensuring better spending, saving and other financial decisions.

Readers should keep in mind two caveats which apply to the results. First, while the eight NLS surveys used cover most of the adult age range, results for older males are not known. While there are two NLS cohorts that tracked older men, none of their surveys included perceived wealth questions. Second, while the NLS sampling frameworks explicitly include minorities and the poor, no NLS survey explicitly targets the rich. Hence, NLS data can not answer if underestimation is a phenomena found among the very rich, whose investment and spending habits have more impact on

the economy than the middle class and poor.

This research leaves open a number of important questions such as how and why individuals form these biased wealth perceptions. Future research also needs to investigate if additional demographic factors such as more detailed ethnic origin, religion or occupation have important effects on perceptions. Lastly, research needs to investigate if wealth misperceptions have real effects on the economy by modifying U.S. debt and savings levels or changing spending patterns. Whatever this additional research finds, wealth misperceptions are a phenomena that deserves attention.

The conclusion for financial planners and counselors is clear. While typical clients can probably describe their debt

and asset holdings in detail, most do not have a realistic mental image of their overall financial situation. Understanding net worth is like the parable of blind men describing parts of an elephant. Each blind man accurately tells the others what he is feeling but the details do not help any of them to understand the big picture. Planners and counselors not only need to draw up accurate net worth statements for clients but also ensure the clients accurately internalize a mental picture of their finances. Ensuring that the mental image matches an individual's actual net worth will enable clients to make better financial decisions long after leaving the planner's or counselor's office.

Appendix

The calculated net worth value for each NLS respondent is created by summing all the asset answers in each wealth module and subtracting from that total all the debt answers. The first step in building the NLSY79 calculated net worth series was to extract the raw un-topcoded data from the original data tapes.⁹ These raw data were then merged with the filtered information on the NLSY79 public use CD-ROM. The data needed to be merged because both sources of data have different types of information. The original data tapes have full information on asset values, particularly for high wealth individuals. The public use data tapes have codes explaining why asset data are not present for a particular individual. A simple merge algorithm was used to combine the two sources. Assets below the topcode limit were taken from the public use CD-ROM, while assets at or above the top code limit were taken from the raw tapes.

The next step was to find all valid skips (-4) in the data. Valid skips mean the respondent does not own the asset or owe the debt. These items were given a value of zero. This step ensures that individuals with no wealth have zero assets. Then, all other problem flags, marking invalid skips, refusals, don't knows and out-of-range, were set to minus one. This value flagged the asset as a candidate for the imputation algorithm.

The third step was to impute missing values. While many imputation algorithms are available the longitudinal aspect of the NLSY79 data provides a simple but effective solution. Data were linearly interpolated if bracketing values were available. This algorithm is a slight refinement to the procedure used in the Netherlands Socio-Economic Panel (Camphuis 1993) and is based on the assumption that wealth changes are primarily low frequency trend movements. This imputation choice causes some data smoothing because of the interpolation. However, no matter what algorithm is chosen, the high response rates mean NLSY79 data need little imputation.

Finally, the data are summed using equation (1) and adjusted to 1995 dollars to enable intertemporal comparisons.¹ These steps eliminate most of the problems in the NLSY79 data and provide a full data set in real 1995 dollars.

$$\begin{aligned} \text{Net Assets} = & \\ & \text{Home Value} - \text{Mortgage} - \text{Property Debt} + \text{Cash Save} \\ & + \text{Stock/Mutual Funds} + \text{Trust} + \text{Business/Farm/RE Equity} - \\ & \text{Business/Farm/RE Debt} + \text{Car Value} - \text{Car Debt} + \text{Possessions} \\ & - \text{Other Debt} + \text{IRA} + 401k + \text{CD} \end{aligned} \quad (1)$$

While the Mature and Young Women calculated net worth series are created in a similar fashion to the NLSY79's there are a small number of key differences. First, top code values were not removed since access to the raw data was not available. Second, imputation was not done. Instead, missing answers were taken from bracketing questions which

attempted to provide a rough minimum and maximum range for respondents who did not know or did not want to answer the wealth questions. Respondents who answered the bracketing questions were assumed to hold $\frac{3}{4}$ of their selected bracket's maximum.⁵ Lastly, the exact equation used for calculating net worth, shown in (2), contains slightly different terms since the underlying wealth questions are not the same.

$$\begin{aligned} \text{Net Assets} = & \\ & \text{Home Value} - \text{Mortgage} - \text{Property Debt} + \text{Cash Saving} + \text{Savings Bonds} \\ & + \text{Stock/Mutual Funds} + \text{Loans to Others} + \text{Life Insurance} + \text{Trust} + \text{Farm} \\ & \text{Value} - \text{Farm Debt} + \text{Business Equity} - \text{Business Debt} + \text{Investment Real} \\ & \text{Estate} - \text{Invest R.E. Mortgages} - \text{Invest Real Estate} - \text{Other Debt} + \text{Car} \\ & \text{Value} - \text{Car Debt} - \text{Other Debt} + \text{IRA} \end{aligned} \quad (2)$$

Endnotes

- a. *Research suggests individuals not only have mistaken perceptions but also make financial mistakes even when given perfect information. Kotlikoff, Samuelson and Johnson (1988) and Johnson, Kotlikoff and Samuelson (1987) paid volunteers to participate in a simulation. They provided complete information about a person's future and told subjects the goal was to leave no bequests. Even with perfect information, "almost all subjects exhibited oversaving behavior, apparently because they underestimated the power of compound interest."*
- b. *Deaton (1992) contains not only the models but also a complete literature overview. Readers interested in consumption should also examine Friedman (1957) and Hall's (1988) classic works.*
- c. *For example, USA Today in December of 1985 asked about what individuals daydreamed. The second most dreamed about topic was "Wealth, Money." (Institute for Research in Social Science 1985, Study 9107 Question 21B).*
- d. *This research uses the weights created for the 1995 survey to eliminate any biases caused by the Black over-sample.*
- e. *The 1993 Young Women's survey also includes questions asking respondents to estimate their parent's and their in-law's net worth. Analyzing these additional questions is left for future research.*
- f. *For example, brackets identify if a respondent holds between \$500 and \$1,000 worth of savings bonds.*
- g. *To keep the findings manageable NLSY79 results are just the mean of all five waves.*
- h. *The small number of respondents with perceived values over \$1 million are excluded from the calculations. Some high values appear to be transcription or editing mistakes.*
- i. *Credit card debt is not explicitly part of the list because when the question was formulated and first fielded in the mid 1960s this kind of debt was relatively unimportant. To maintain comparability over time the question's wording has not changed.*
- j. *The 63.2% answer was calculated by averaging the following percentages; NLSY79 1990 (59.2%), NLSY79 1992 (59.2%), NLSY79 1993 (63.1%), NLSY79 1994 (63.7%), NLSY79 1996 (65.9%), Young Women 1993 (58.2%), Young Women 1995 (59.2%), and Mature Women 1995 (76.7%).*
- k. *While the magnitude of the correlations are close to zero the correlations are statistically significant from zero at the 1% level.*
- l. *The author has asked NLS interviewers how often they believe respondents lie in the wealth module. Interviewers uniformly believe that suspicious respondents do not make up numbers, instead they either refuse or state they do not know the answer to the question.*
- m. *Measured by changes in R².*
- n. *All NLS data sets include a variable entitled net family income (NFI). The author did not use this series since the NFI algorithm does not produce a value for any respondent who misses even one income question. Many of the missing income items are of low*

- value. For example, numerous individuals with low net worth could not state how much interest they earned and hence have no NFI value. To bypass this problem each respondent's income is the sum of all known income values.
- o. Each NLSY79 respondents is coded into one of three categories; Hispanic, Black or non-Hispanic/non-Black. Individuals who are both Black and Hispanic are classified as Hispanic. In the 1960s when the Women's cohorts were started, the Hispanic population of the U.S. was considered too small to separately tabulate. Most Hispanics in the Women's cohorts are classified as white.
 - p. AFQT is a summary score from the Armed Services Vocational Aptitude Battery or ASVAB exam. This exam is used by the military to screen recruits and by the research community as a proxy for IQ (Hernstein & Murray, 1994).
 - q. As an NLS staff member the author has access to the raw untopcoded data. The results, however, are not dependent on this special access since the topcoded public use data produce similar findings.
 - r. Inflation adjustments are done using the CPI-W with 1995 as the base year. The adjustment factors used are; 0.862 (1990), 0.922 (1992), 0.948 (1993), .0972 (1994), 1.000 (1995) and 1.029 (1996).
 - s. Three quarters aligned missing answers closer to the known wealth values than other common ratios.

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