The Demographics of Wealth

How Age, Education and Race Separate Thrivers from Strugglers in Today's Economy

Essay No. 3: Age, Birth Year and Wealth | July 2015

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An Introduction to the Series

The Demographics of Wealth

How Age, Education and Race Separate Thrivers from Strugglers in Today's Economy

By Ray Boshara, William R. Emmons and Bryan J. Noeth

A new economic reality is emerging in the U.S. It's between the thrivers, the one-quarter of the population who, generally, are accumulating wealth, and the strugglers, the other three-quarters who, generally, are not. As we show, race, education and age increasingly determine whether someone is a thriver or a struggler.

This is the third in a series of essays that the Center for Household Financial Stability at the Federal Reserve Bank of St. Louis is publishing on how a family's race or ethnicity, educational attainment, and age are related to its financial choices and the financial outcomes it experiences. Our primary data source is the Federal Reserve's triennial Survey of Consumer Finances, which provides the most comprehensive picture of American families' balance sheets and financial behavior over time. We use information from over 40,000 families, each of which was surveyed in one of nine waves between 1989 and 2013.

By partitioning the sample in each wave into 48 nonoverlapping groups based on four racial or ethnic groups, four levels of educational attainment, and three age ranges, we document profound and persistent differences in financial decision-making, balance-sheet choices and wealth outcomes across groups. We show that each demographic dimension is important in its own right.

After considering each of the 48 groups, we describe eight of them as thriving financially. These groups include families headed by someone who is typically middle-aged or older, white or Asian, and with a college degree alone or with a graduate or professional degree. These families generally earn above-average incomes, make or respond to good financial choices, and have accumulated substantial wealth. These families constituted 24 percent of all U.S. families in 2013; they owned 67 of the economy's wealth.

The groups we describe as struggling financially—the remaining 76 percent of all families—are typically younger, less educated, or black or Hispanic. They earn average or below-average incomes, make or respond to less-conservative financial choices, and have accumulated little or no wealth; they own 33 percent of the nation's total wealth. Many, although not all, of these families are financially unstable.

Demography may not be destiny, but it is powerful in predicting family wealth. By documenting the links between race and ethnicity, educational attainment, and age on the one hand, and financial behaviors and financial outcomes on the other, we hope to inform policymakers, community practitioners, financial institutions and others in their efforts to improve the financial health of American families and the nation as a whole.

EXECUTIVE SUMMARY OF ESSAY NO. 3

Although there may be downsides to old age, those 62 and older can take heart in knowing that the odds are in favor of their being wealthier than younger people. And the gap has widened considerably over the past quarter-century—in favor of old people. That said, being old isn't what it used to be. Baby boomers, who are now retiring in droves, are likely to be less well-off than their "old" counterparts in the two previous generations. And it looks as if members of the next two generations—Generation X and Generation Y (the millennials)—might also end up less wealthy than the generation before them.

These are just some of the connections between age and wealth that were found in researching this essay—the third—in our "Demographics of Wealth" series. (The first looked at the link between race/ethnicity and wealth. The second examined the connection between education and wealth. Both can be read at www.stlouisfed.org/hfs; accompanying videos can also be viewed there.) All of the essays are the result of our analysis of data collected between 1989 and 2013 by the Federal Reserve for its Survey of Consumer Finances. More than 40,000 families were interviewed by the Fed over those years.

For this essay, we looked at age in two ways: where a person stands in the life cycle (young, middle-aged or old) and how birth-year cohorts stack up against one another. This latter approach allows us to make some comparisons of generations, from "the greatest generation" of WW II fame to the millennials of today.

Among our findings:

- The median wealth of old families (headed by someone at least 62) rose 40 percent between 1989 and 2013, from just under $150,000 to about $210,000. The median wealth of a middle-aged family (40-61) in 2013 was 31 percent lower than in 1989, declining from $154,000 to about $106,000. The median wealth of a young family dropped more than 28 percent, from $20,000 to just over $14,000. (All figures are adjusted for inflation.)
- The explanations for this growing gap are difficult to pin down. The lack of education does not appear to be to blame, given that each succeeding generation is better-educated than the previous one. Younger families could be losing ground, in part, because they are more racially and ethnically diverse than ever before—and we know that race- and ethnicity-based disadvantages continue to loom large in our society.
- Baby boomers could be faring worse (not just in wealth, but income) because there are so many of them. They've had to compete more for jobs, housing, investment opportunities, etc., than did the less-numerous generation before them. That so-called silent generation (born 1925-1944) was relatively small because birth rates dropped during the Great Depression; the "scarcity" of people then worked to their advantage during the post-WW II economic boom.
- Although young families are often depicted by other observers as "poor," such labeling might be a stretch. The average young family has always been pinching pennies, given that it is just starting to make money and has a lot of major expenses (marriage, children, house, etc.). Young families that want to increase their chances of being wealthy should emulate the financial decision-making of older families: maintain an emergency fund, pay down debt, put extra money in high-return investments, such as stocks, etc. Delaying the purchase of a house can also help in multiple ways.

Essay No. 3

Age, Birth Year and Wealth

By William R. Emmons and Bryan J. Noeth

The first two essays in this series described large and persistent differences in financial behaviors and financial outcomes across racial and ethnic groups and across education groups.[1] In the first essay, we showed that non-Hispanic whites and Asians are much more likely to be thriving financially than blacks and Hispanics of any race, who were more likely to be struggling. In the second essay, we showed that families with higher levels of education generally fared better than those with less education along a number of important dimensions.

This essay documents significant differences in financial choices and financial outcomes across the life cycle (that is, at different stages of life) and across birth-year cohorts (that is, comparing different groups of people who were born at about the same time). Like race-, ethnicity- and education-related disparities, the age- and birth year-related differences described here have existed at least since 1989, when our data begin. We show that gaps in several financial behaviors and financial outcomes related to age and year of birth have grown larger in recent years.

The existence of a life-cycle effect in economic and financial matters is uncontroversial. Yet many important discussions—such as changes in the overall income or wealth distributions—sometimes ignore the life cycle with misleading implications. Young families typically start out with little or no wealth—hence are "poor" on a simplistic ranking of all families—but some will accumulate wealth rapidly as they grow into middle age. Thus, it is misleading in many cases to include young families among the ranks of the poor. At the other end of the life cycle, a typical family's wealth does not begin to decrease until quite an advanced age. Many older adults, therefore, appear "rich." Yet some older families with above-median wealth may not be particularly well-off if their current income is low or their expenses, such as health care, are high.

A less well-known fact is that your year of birth influences your wealth, too. Following the work of others, we found that a family headed by someone born about 1970, for example, was likely to have about 40 percent less wealth (inflation-adjusted) at any given age than an otherwise identical family headed by someone born about 1940 when he or she was the same age (holding constant the level of education, race or ethnicity, health status, income, etc.). This positive birth-year effect for people born about 1940 reinforces the positive life-cycle effect on wealth accumulation, making people currently in their 70s the beneficiaries of two purely demographic influences on their wealth—their age and the era in which they were born.

This essay begins by describing the two alternative frameworks we used to analyze the connections between when someone was born and their income and wealth—a life-cycle approach and a birth-year cohort approach. The second section contains brief qualitative snapshots of the current income, wealth and key financial behaviors of each of three broad age groups—young, middle-aged and old families—and an overview of some important patterns across different birth-year cohorts. The third section provides detailed characterizations of family balance sheets and financial behaviors across a typical life cycle during the past quarter-century, based on the

Survey of Consumer Finances (SCF).[2] The final section isolates birth-year cohort effects on income and wealth, using results from a regression framework; the details are in a technical appendix, which might be of interest primarily to researchers.

I. Stages in the Adult Life Cycle and Birth-Year Cohorts

We used a family head's year of birth in two different ways by applying both a life-cycle framework and a cohort, or generational, perspective. The life-cycle framework highlights effects that operate on all or most families in a certain age range whenever they reach it in historical time (such as the middle or late 20th century or the early 21st century). For example, all young people face decisions about education, employment, marriage, child-bearing, homeownership, saving, investment and a host of other things. Old people face some of the same decisions but in the opposite direction—whether or when to exit employment, to stop saving, draw down investments, etc. The underlying assumption of the life-cycle framework is that the stage of life itself is important in its own right regardless of a family's experiences before reaching that age or the time period in which it is lived.

Sidebar 1: Classifying Individuals and Families by Age and Birth-Year Cohort

We assigned each family to a life-cycle group based on the age of the family head (or single individual) at the time of the survey.[3] We used the term **young** when referring to families whose head was under 40 years of age at the time of the survey. We used the term **middle-aged** in referring to families whose head was between 40 and 61 at the time of the survey. **Old** families were headed by someone 62 years or older at the time of the survey. Each family was assigned a birth year based on the birth year of the family head, even if other members of the family had birth years that would place them in a different life-cycle group.

We chose cut-offs at 40 and 62 years of age to create three groups that each represented approximately one-quarter to one-half of the sample in each survey year. (See Table 1.) The groups were designed to capture broad features of typical economic and financial life cycles, including homeownership, employment and receipt of retirement benefits. For example, all five-year age groups under 40 (for example, 35-39) have had homeownership rates below the national average, while all five-year age groups 40 or older have had homeownership rates above the national average since 1990.[4] Thus, young families in our classification system were more likely to be renters than either of the other age groups.

According to the Bureau of Labor Statistics, the employment-to-population ratio for each age group increases until ages 35-44 and then declines.[5] Thus, families we classified as young were more likely to include members who were not yet in their working careers or were early in their working careers than were families in the older groups, which were more likely to include members who were later in their working careers or had left work altogether.

At the upper break point of 62, the employment-to-population ratio is about equal to the overall population's employment-to-population ratio. In fact, the employment-to-population ratio for the 55-59 age group was 9.3 percentage points above the population average in 2014, while the ratio for the 60-64 age group was 5.7 percentage points below the population average.[6] Thus, the group of families 62 or older is significantly less likely to include working members than families in the middle-aged group. In addition, the youngest age at which Social Security benefits can be drawn is 62. Thus, families in the old group were far more likely to be receiving a fixed retirement income than were families headed by someone under 62.

We did not assign families to life-cycle groups based on their actual homeownership, employment or retirement status because the specific timing of each of these decisions is endogenous, that is, each family or individual chooses if or when to make each transition (or may be forced to or prevented from making a transition by individual circumstances). There may be factors other than age or birth year that contribute systematically to these decisions, factors such as race, ethnicity or educational attainment. In this essay, we wanted to isolate the effects of age and birth year on economic and financial choices and outcomes; therefore, we imposed a fixed life-cycle age structure in much of our discussion. We used a more-granular—but still fixed—life-cycle and birth-year cohort structure in the regression models described in Section 4.

Table 1. Share of Families in the Survey of Consumer Finances by Age Group

Percent	1989	1992	1995	1998	2001	2004	2007	2010	2013
Old: 62 or older	25.9	26.3	25.9	24.2	24.5	24.7	25.5	26.9	28.9
Middle-aged: 40-61	35.9	36.1	37.7	41.0	42.6	43.4	43.8	43.7	42.1
Young: Under 40	38.3	37.6	36.3	34.7	32.8	31.9	30.7	29.4	29.0

Unless otherwise noted, the source for all tables and figures is the Federal Reserve's Survey of Consumer Finances.

Table 2. Median Wealth of Families by Age of Family Head

	Median wealth in 1989	Percent of families in upper half of nation's wealth distribution in 1989	Median wealth in 2013	Percent of families in upper half of nation's wealth distribution in 2013	Percent change in median wealth between 1989 and 2013
All families	$85,575	50.0%	$81,456	50.0%	-4.8%
Old: 62 or older	$149,728	62.3%	$209,590	70.3%	40.0%
Middle-aged: 40-61	$153,759	63.8%	$106,094	54.0%	-31.0%
Young: Under 40	$19,830	28.7%	$14,220	23.9%	-28.3%

All dollar amounts are expressed in 2013 dollars, deflated by the CPI-U-RS (Consumer Price Index for Urban Consumers, Research Series).

To capture the three main stages of the adult life cycle, we assigned each family in each survey year to one of the following groups:

- young: families headed by someone who is younger than 40 at the time of the survey (representing 29 percent of all families in the 2013 Survey of Consumer Finances);
- middle-aged: those between 40 and 61 years old (42 percent);
- old: those 62 years or older (29 percent). (See Table 1.)

Cohort analysis is an alternative and complementary analytical framework. Cohort analysis illuminates the possibility that certain groups of families born at one point in time (or a range of years) may experience a life-cycle stage differently than other groups born in different years (for example, people born in the 1940s vs. people born in the 1960s). By following through time various cohorts of families defined by their (that is, the family head's) year of birth, we may be able to identify unique aspects of their life courses that are not strictly life-cycle regularities. Instead, there may be experiences common to birth-year cohorts or larger generations (such as the baby boomers) that systematically influence their choices and outcomes.

II. Financial Snapshots of Three Age Groups and Five Generations

A simple way to describe typical financial differences across the life cycle and how they have changed is to compare the respective income or wealth distributions of young, middle-aged and old families at different points in time. (See Sidebar 2.) For example, the median wealth of old, middle-aged and young families in 1989 was $149,728, $153,759 and $19,830, respectively, expressed in dollars adjusted to the purchasing power of 2013. (See Table 2). Within the overall distribution of family wealth in 1989, 62.3 percent of old families ranked above the median, while 63.8 percent of middle-aged families had above-median wealth—but only 28.7 percent of young families did.

By 2013, the wealth medians were $209,590, $106,094 and $14,220 for the old, middle-aged and young, respectively. Within the overall distribution of family wealth in that year, 70.3 percent of old families ranked above the median. Only 54.0 percent of middle-aged families had above-median wealth, while just 23.9 percent of young families were in the top half. Combined with the increasing share of old families in the population (recall Table 1), the large increase in typical wealth among old families (an increase of 40.0 percent between 1989 and 2013) means that wealthy families in 2013 were

Sidebar 2: Family Wealth and Income

Wealth is a family's net worth, consisting of the excess of its assets over its debts at a point in time. Total assets include both financial assets, such as bank accounts, mutual funds and securities, as well as tangible assets, including real estate, vehicles and durable goods. Total debt includes home-secured borrowing (mortgages), other secured borrowing (such as vehicle loans) and unsecured debts (such as credit cards and student loans). Debt incurred in association with a privately owned business or to finance investment real estate is subtracted from the asset's value, rather than being included in the family's debt. All wealth figures in the essay are adjusted for inflation to be comparable to values recorded in 2013.

To measure income for the SCF, the interviewers requested information on the family's cash income, before taxes, for the full calendar year preceding the survey. The components of income in the SCF are wages, self-employment and business income, taxable and tax-exempt interest, dividends, realized capital gains, food stamps and other related support programs provided by government, pensions and withdrawals from retirement accounts, Social Security, alimony and other support payments, and miscellaneous sources of income for all members of the primary economic unit in the household.[7]

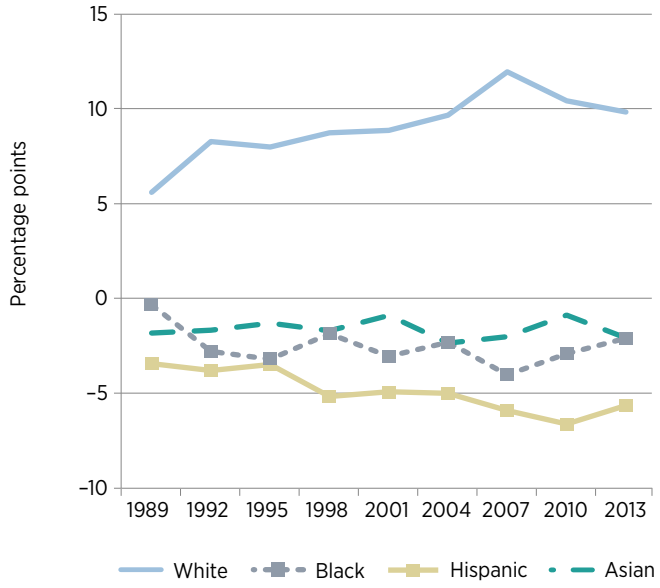
much more likely to be old than they were in 1989. Meanwhile, the median middle-aged family in 2013 had 31.0 percent less wealth than the median middle-aged family in 1989, while the median young family had 28.3 percent less wealth in 2013 than its counterpart did in 1989.

Another way to illustrate how different the financial lives of families are at different stages in their life cycles is to calculate the odds of having at least $1 million in net worth. In 1989, the odds of a family headed by someone under 40 having $1 million of wealth or more were about 1 in 51. By 2013, the odds had lengthened slightly to 1 in 55. Among middle-aged families, 1 in 12 had at least $1 million in 1989 and 1 in 9 had that much wealth in 2013. Among old families, 1 in 11 was a millionaire in 1989 but 1 in 7 old families had at least $1 million in 2013. In other words, typical wealth differences between young and old families were large in 1989 and had increased notably by 2013.

A snapshot of families headed by someone under 40. The head of a randomly chosen family headed by someone under 40 was somewhat more likely to be black and much more likely to be Hispanic than his or her respective race's share in the overall population in 2013.[8] A randomly chosen young family was much less likely to be white than the white share of the overall population of families. A young family's wealth was likely to be far below the levels of middle-aged and old families, but the young family's income was similar to that of an old family and less than that of a middle-aged family. A typical young family's cash reserves were likely to be similar to those of middle-aged and old families as a share of total assets, but because young families typically have few assets, this means the actual amount of liquid assets to meet emergencies was small. The young family's financial or business assets, which are important for diversification and long-term wealth accumulation, probably were small both in absolute value and relative to the family's total assets. A young family was more likely to have debt than a family over 40, and the young family's borrowing probably was much greater than that of middle-aged and old families relative to assets or income. Low asset diversification and high debt made the typical young family's financial life risky. Moreover, a typical young family scored poorly on our index of sound day-to-day financial decision-making, including saving and cash-management choices.[9]

A snapshot of families headed by someone at least 40 but less than 62 years old. The racial and ethnic composition of the group of families headed by someone between 40 and 61 was almost identical to the overall population averages throughout 1989-2013.[10] A typical middle-aged family's wealth was likely to be between the wealth of old and young families. Its income, however, was likely to be significantly higher than those of old or young families. A typical middle-aged family's cash reserves, share of financial and business assets in total assets, and total debt relative to total assets were likely to be

Figure 1. Difference between a Racial or Ethnic Group's Share of Older Families and the Group's Share of All Families



Families headed by a non-Hispanic white person 62 years or older constituted 79.9 percent of all families headed by someone 62 or older in 2013. The share of all families headed by a non-Hispanic white person of any age in 2013 was 70.1 percent. The difference between these two shares—9.8 percentage points—is shown in the top line in the figure. White families have been over-represented among old families compared with their share in the total population by a substantial amount throughout the period for which we have SCF data.

All other points in the figure are derived analogously for each racial or ethnic group in each year. All groups other than whites have been under-represented among old families compared with their shares of the total population of families since 1989.

Unless otherwise noted, the source for all tables and figures is the Federal Reserve's Survey of Consumer Finances.

close to the population medians and between those of old and young families. Perhaps surprisingly, a typical middle-aged family scored only slightly better than young families on our index of sound day-to-day financial decision-making and far below the typical old family.

A snapshot of families headed by someone 62 years or older. The most striking aspect of the racial and ethnic composition of families headed by someone at least 62 years old is the over-representation of whites. (See Figure 1.) Whites represented 79.9 percent of old families in the 2013 SCF, while they constituted only 70.1 percent of all families.[11] A typical old family's wealth was likely to be much higher than the wealth of middle-aged and young families. Its income, however, was likely to be slightly lower than that of a young family and significantly less than that of a middle-aged family. A typical old family's share of financial and business assets to total assets was likely to be much higher and its total debt relative to total assets much lower than those of either of the other groups. A typical old family scored far above young and middle-aged families on our index of sound day-to-day financial decision-making.

A snapshot of families headed by someone born before 1925. The generation born during the first quarter of the 20th century has been called the "greatest generation" or the "G.I. generation" because it contributed most of the men and women who fought in World War II.[12] This group of Americans was overwhelmingly white and had much less education than later generations. For example, in the 1989 SCF, more than 80 percent of families 62 or older were white (representing family heads born in 1927 or earlier). Only 17 percent of these families had two- or four-year college degrees. A further 36 percent of family heads had completed high school, but 47 percent of family heads had not completed high school. We cannot use the SCF to describe this generation's young or middle-aged income or wealth because these families were in retirement already when our data begin. Figure 2 shows the median incomes of the 1915-17 cohort at three-year intervals when these family heads were in their early 70s through their mid-90s. Figure 3 shows that, in contrast to income, the median wealth levels of the 1915-17 cohort did not decline in retirement.[13] (Once again, all figures are adjusted for inflation.)

A snapshot of families headed by someone born between 1925 and 1944. The family heads born during the 20 years following the greatest generation sometimes are referred to as the "silent generation" because members reached adulthood after World War II and were humbled by the accomplishments of the generation that preceded them. This generation played an understated role in American life also because its numbers were small; birth rates plunged during the Great Depression. This generation was overwhelmingly white (about 76 percent of middle-aged families observed in the 1989 SCF)

Figure 2. Median Income of Three-Year Birth Cohorts

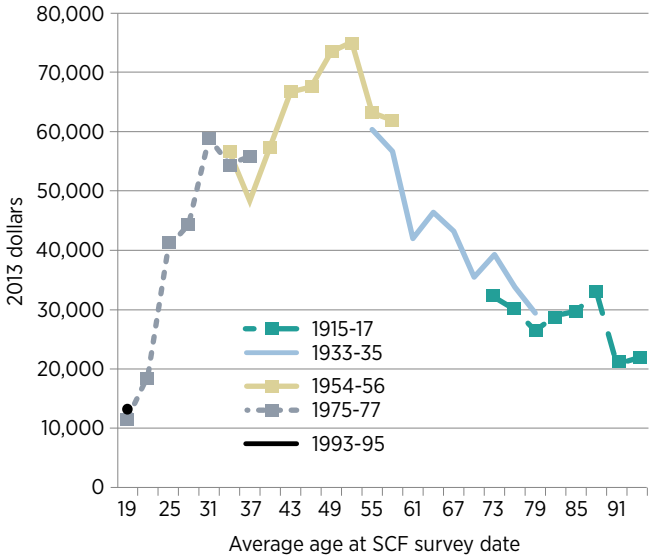
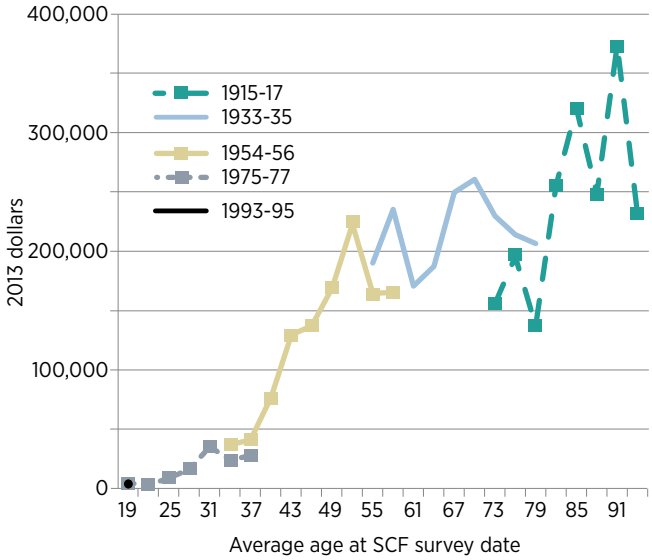


Figure 3. Median Net Worth of Three-Year Birth Cohorts



All dollar amounts are expressed in 2013 dollars, deflated by the CPI-U-RS (Consumer Price Index for Urban Consumers, Research Series).

To illustrate the life cycle of family incomes (left) and wealth (right) and differences across birth-year cohorts, we assigned each family in each survey to a three-year birth cohort. The oldest selected cohort shown here includes all families whose head was born during 1915-17. They were observed in the SCF at ages 72-74 in 1989, which is represented on the horizontal axis as average age 73; ages 75-77 in 1992 (average age 76); and so on through ages 95-97 in 2013. Because there were so few observations for the cohort in 2013, we show this group only through 2010, when they were 93-95 (average age 94).

The 1954-56 cohort was observed nine times—at ages 33-35 in 1989 (average age 34); ages 36-38 in 1992 (average age 37); and so on through ages 57-59 in 2013 (average age 58).

The 1975-77 cohort was observed seven times—at ages 18-20 in 1995 (average age 19); ages 21-23 in 1998 (average age 22); and so on through ages 36-38 in 2013 (average age 37).

The 1993-95 cohort was observed once at ages 18-20 in 2013 (average age 19).

Unless otherwise noted, the source for all tables and figures is the Federal Reserve's Survey of Consumer Finances.

but less so than the greatest generation.[14] The silent generation was much better-educated than the greatest generation, as 32 percent of family heads among the former achieved a two- or four-year college degree, 49 percent received high school diplomas and only 19 percent did not finish high school. The silent generation probably benefited economically and financially from the post-WW II economic boom and from this generation's own small numbers. Figure 2 shows that the 1933-35 cohort enjoyed substantially higher median incomes than the 1915-17 cohort at the same ages. In fact, the 1933-35 cohort's median incomes were 22.5, 12.6 and 11.3 percent higher than the 1915-17 cohort's median incomes at ages 72-74, 75-77 and 78-80, respectively. Figure 3 shows that the 1933-35 cohort's median wealth levels surpassed those of the 1915-17 cohort at the same ages by an even larger margin: by 47.5, 9.5 and 50.9 percent, respectively.

A snapshot of families headed by someone born between 1945 and 1964. The members of the generation born during the two decades after World War II commonly are called baby boomers because the birth rate skyrocketed during this period. The baby boom generation was the most racially and ethnically diverse generation to that time in American history, with about 73 percent of families headed by someone who was a non-Hispanic white.[15] It also was the best-educated generation to

that time, with 42 percent of family heads receiving at least a two- or four-year college degree. A further 48 percent of family heads had high school diplomas, while only 11 percent had not finished high school. Baby boomers also benefited from the strong post-WW II economy. Figure 2 shows that the 1954-56 cohort enjoyed median incomes 4.7 and 9.3 percent higher than the 1933-35 cohort at ages 54-56 and 57-59, respectively. However, Figure 3 reveals that the median wealth of the 1954-56 cohort fell short of the median wealth of the 1933-35 cohort at ages 54-56 and 57-59, by 13.5 and 29.8 percent, respectively. These two observations correspond to the 2010 and 2013 SCF dates, after asset prices had been reduced by the Great Recession.

A snapshot of families headed by someone born between 1965 and 1984. People born during the two decades after the baby boom are sometimes called members of Generation X because their place in history was uncertain. Generation X was even more racially and ethnically diverse than the baby boomers, with only about 70 percent of families headed by someone who was a non-Hispanic white.[16] Educational attainment in Generation X probably will surpass that of baby boomers, but the extent of improvement is still uncertain since some people do not complete their education until well into their 30s.[17] Members of Generation X appear to have benefited much less from rising living standards than did previous generations. Figure 2 shows that the 1975-77 cohort received median incomes 3.7 percent below the median income of the 1954-56 cohort at ages 33-35 and 15.5 percent higher than the 1954-56 cohort at ages 36-38. Figure 3 shows that the median wealth of the 1975-77 cohort was unambiguously lower than the median wealth of the 1954-56 cohort at ages 33-35 and 36-38, by 35.4 and 32.7 percent, respectively. These observations are from 2010 and 2013, after asset prices had declined.

A snapshot of families headed by someone born after 1984. People born in the early to mid-1980s and beyond have been termed "millennials" or members of Generation Y. It is too early in their adult lives to say very much about how millennials will fare economically or financially compared with their elders. It is safe to say, however, that the millennial generation will be the most diverse and perhaps the best-educated of any generation.

III. Income, Wealth, Balance Sheets and Financial Behaviors

Striking and persistent differences in the typical family's income, wealth, balance-sheet structure and a measure of financial decision-making that we call financial health are evident across the life cycle. Some differences are evident across birth-year cohorts or generations, too. There is no *a priori* reason to expect life-cycle patterns to change over time in any particular way—for example, for the young or the old to become relatively better or worse off compared to other stages of the life cycle.

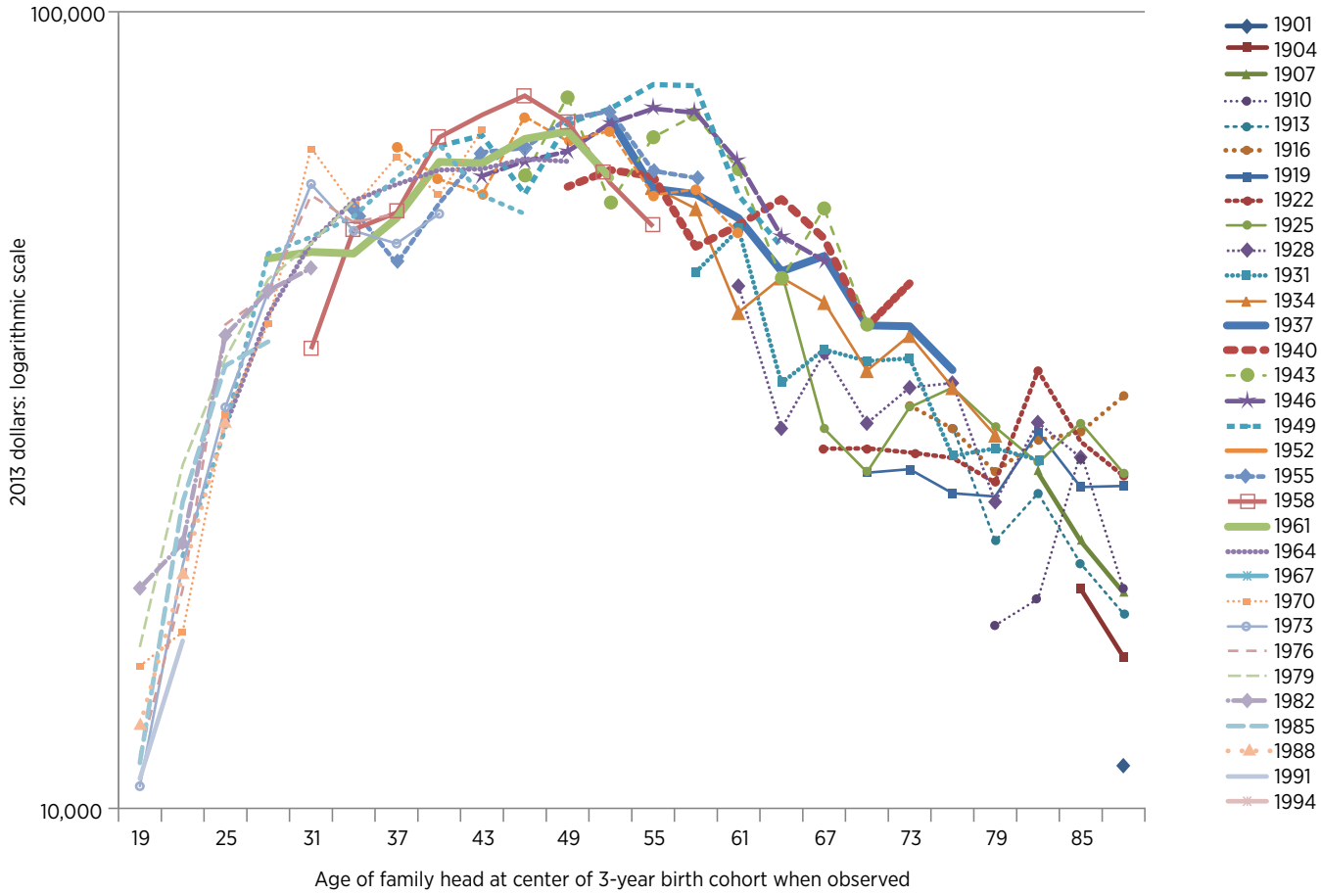
In some important ways, however, we found that differences across the typical life cycle have grown larger since 1989, when our data begin. For example, old families long have had more wealth than young families, but the gap has grown substantially in recent years and it is not obvious why. Likewise, we found substantial deviations from a simple upward trend in income and wealth over time, which one would expect as living standards rise.

Income. A family's income generally follows a hump-shaped pattern over its life cycle, starting at a low level, peaking in middle age, then declining in old age. Figure 2 illustrates this pattern using five cohorts of family heads born throughout the 20th century. Figure 4 combines the observed trajectories of median family incomes for virtually all three-year cohorts born during the 20th century. Individual cohorts were observed up to nine times at three-year intervals between 1989 and 2013.

The logarithmic vertical scale in Figure 4 makes it easy to see the smoothness of changes in the growth rate of the typical life cycle in family incomes. Constant rates of change are represented on a logarithmic scale by straight lines so that growth rates are simply the slope of a line segment. Hence, the figure reveals that the income of a typical family in its 20s rises rapidly in percentage terms. The typical rate of growth slows through the 30s and 40s, with median family income peaking at about age 50. After a plateau during the 50s, median incomes decline more or less continuously from the early 60s onward.

The relative constancy of the life cycle of family income over time is shown in Figure 5. Middle-aged families had the highest median incomes by far throughout 1989-2013, and there was little net change on balance. Old families had the lowest

Figure 4. Median Family Income for Three-Year Birth Cohorts Observed during 1989-2013



All dollar amounts are expressed in 2013 dollars, deflated by the CPI-U-RS (Consumer Price Index for Urban Consumers, Research Series). The vertical scale is logarithmic.

To illustrate the life cycle of family incomes, we assigned each family in each survey to a three-year birth cohort, beginning with all families whose head was born between 1900 and 1902. We call this the 1901 cohort; these families were headed by someone who was between 87 and 89 years old in 1989, the first survey year. The 1904 cohort consists of all families whose head was born between 1903 and 1905, and so on. The last group we include is the 1994 cohort, consisting of families headed by someone born between 1993 and 1995. These family heads were between 18 and 20 years old in 2013, the last survey year.

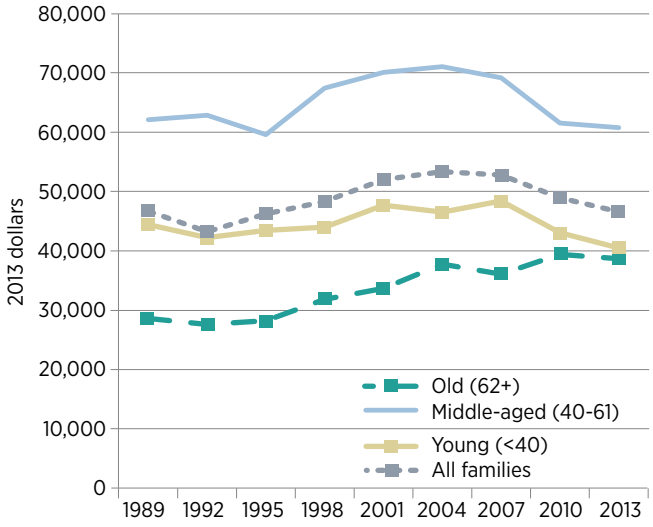
Each three-year birth cohort is observed a maximum of nine times at three-year intervals. The 1970 cohort, for example, was aged 18-20 in 1989; 21-23 in 1992; and so on through ages 42-44 in 2013.

Unless otherwise noted, the source for all tables and figures is the Federal Reserve's Survey of Consumer Finances.

median incomes throughout the period, although this group was the only one to experience a net increase over the 24 years. Figure 6 shows more clearly that the median income of old families increased significantly relative to the overall median income, rising from 61.3 percent in 1989 to 83.0 percent of the median income of all families in 2013. Both middle-aged and young families' median incomes declined slightly, relative to the overall median income.

Wealth. A simple measure of a family's financial strength is its net worth, or wealth. Figure 7 shows that median wealth generally is a non-decreasing function of age. This contrasts sharply with median income, which tends to decline significantly in later life. Another contrast is that a typical family's wealth

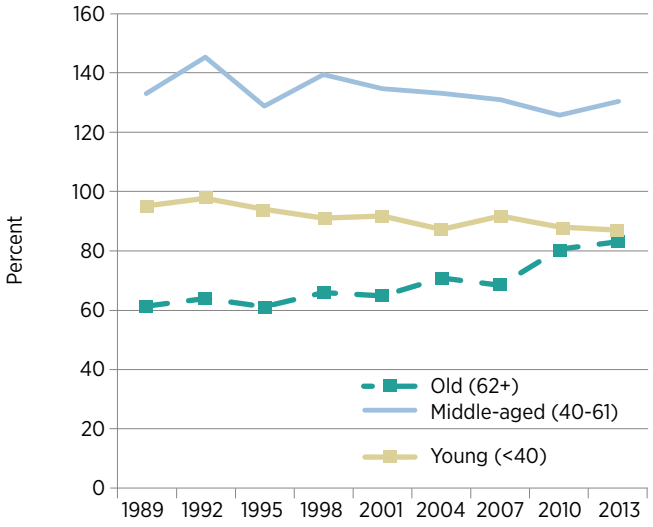
Figure 5. Median Income of Families by Age of Family Head



All dollar amounts are expressed in 2013 dollars, deflated by the CPI-U-RS (Consumer Price Index for Urban Consumers, Research Series).

Median family income is the value of cash income, before taxes, for the full calendar year preceding the survey for the family that ranks exactly in the middle of a ranking by income. The median income among all families decreased from $46,762 in 1989 to $46,668 in 2013, or 0.2 percent. See Sidebar 2 for more information.

Figure 6. Median Family Income by Age of Family Head Relative to Overall Median Family Income



Median family income is the value of cash income, before taxes, for the full calendar year preceding the survey for the family that ranks exactly in the middle of a ranking by income. See Sidebar 2 for more information.

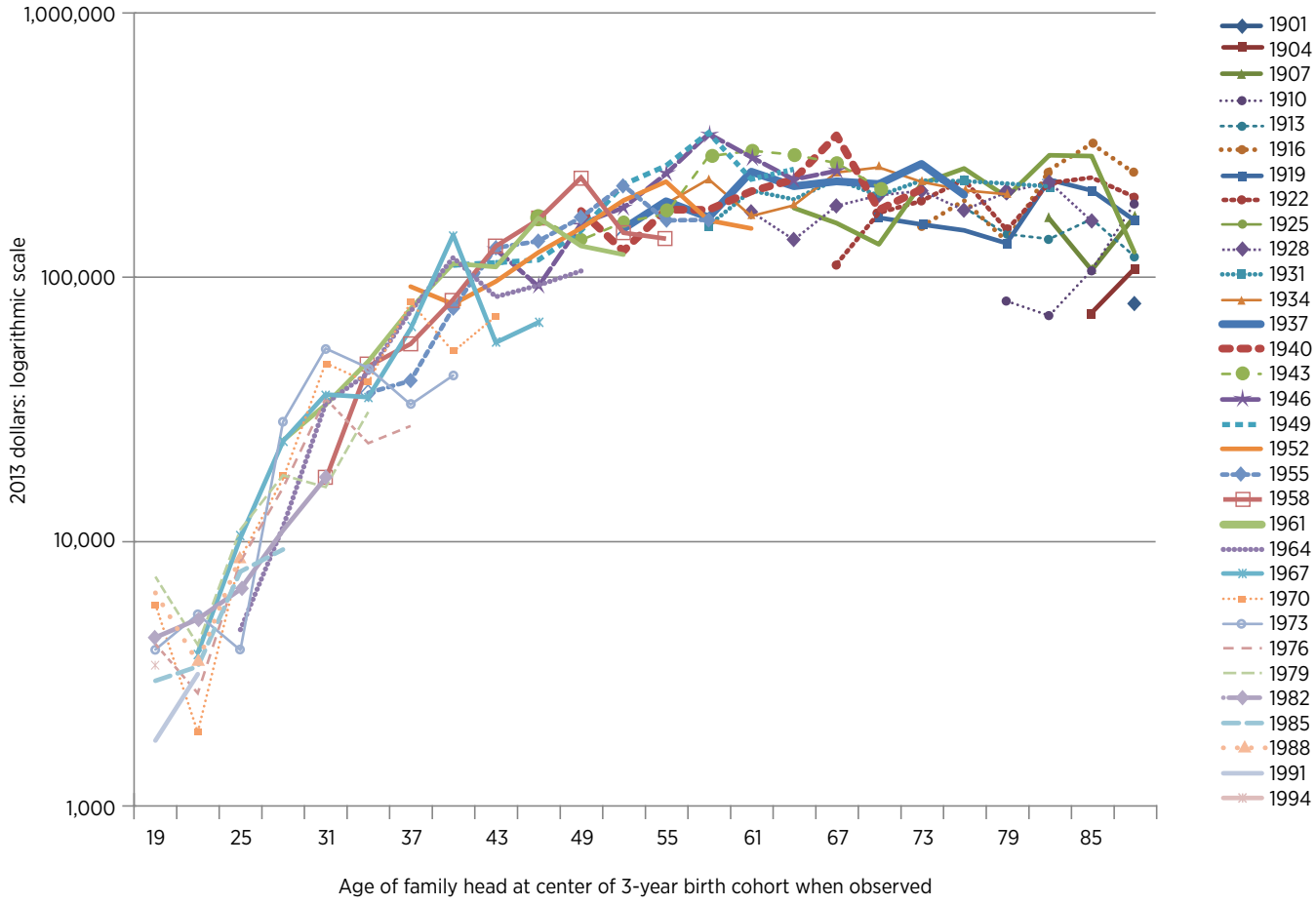
The figure shows that the median income among families headed by someone 62 or older in 2013 was 83.0 percent of the median income among all families. The median family headed by someone aged 40 to 61 was 130.4 percent of the overall median income. The median family headed by someone under 40 had 87.0 percent as much income as the overall median family.

increases more gradually over a longer period of time than is the case for income. Median wealth rises at a slowly decreasing rate from the early 20s until about age 60. Thereafter, median wealth appears to remain flat or decline slightly.

Figure 8 portrays the pronounced life cycle of rising wealth over time. The typical young family has very little wealth. The typical middle-aged family has accumulated wealth in the low six figures, and the typical old family had over $200,000 of net worth in recent survey years. The vastly different experiences over time of families at different stages in the life cycle are illustrated in Figure 9. Relative to the overall median wealth—which declined between 1989 and 2013 by $4,119 in 2013 dollars, or 4.8 percent—the typical old family fared extremely well. The median wealth of an old family was 257.3 percent of the overall median in 2013, compared with just 175.0 percent of the median in 1989. The sharp increase in the ratio in 2010 and 2013 was due to the huge declines in overall median wealth in those years, as Figure 8 shows. Although the median wealth of old families decreased by 16.7 percent between 2007 and 2013, the median wealth of all families decreased by 39.8 percent. Hardest hit were middle-aged families, whose median wealth decreased by 47.3 percent. Young families' median wealth declined by 35.5 percent.

An important conclusion we draw from long-term trends in median income and median wealth is that old families generally have fared better than either middle-aged or young families. This was true in the data through 2007, even before the financial crisis and the Great Recession. Developments reflected in the 2010 and 2013 SCF data accentuated the longer-term trends. Most strikingly, the median-wealth gap between old and young families has increased from $129,899 in 1989 to $195,370 in 2013. Expressed as ratios, the median wealth of old families increased from 7.6 times the median

Figure 7. Median Family Net Worth for Three-Year Birth Cohorts Observed during 1989-2013



All dollar amounts are expressed in 2013 dollars, deflated by the CPI-U-RS (Consumer Price Index for Urban Consumers, Research Series). The vertical scale is logarithmic.

To illustrate the life cycle of family wealth, we assigned each family in each survey to a three-year birth cohort, beginning with all families whose head was born between 1900 and 1902. We call this the 1901 cohort; these families were headed by someone who was between 87 and 89 years old in 1989, the first survey year. The 1904 cohort consists of all families whose head was born between 1903 and 1905, and so on. The last group we included is the 1994 cohort, consisting of families headed by someone born between 1993 and 1995. These family heads were between 18 and 20 years old in 2013, the last survey year.

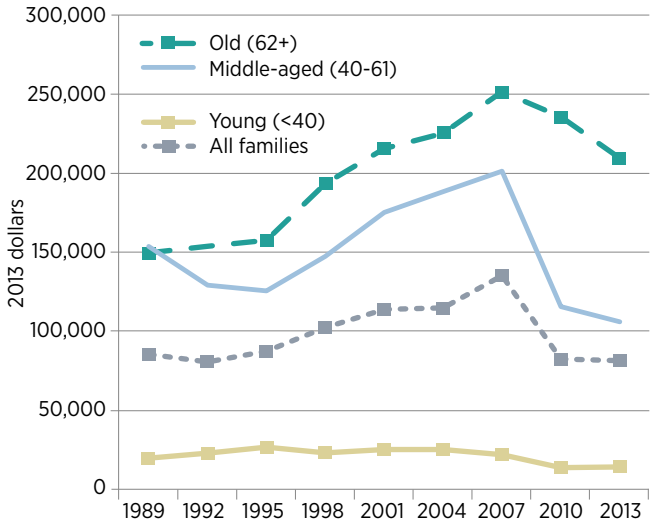
Each three-year birth cohort is observed a maximum of nine times at three-year intervals. The 1970 cohort, for example, was aged 18-20 in 1989; 21-23 in 1992; and so on through ages 42-44 in 2013.

wealth of a young family in 1989 to 14.7 times in 2013.

Overall balance-sheet health. A household's balance sheet lists its assets and liabilities. Although there is no such thing as a perfect balance-sheet configuration or a one-size-fits-all set of prescriptions on how best to choose assets and liabilities, several principles of wealth accumulation and retention are reasonably clear. All else equal, each of the following balance-sheet choices is likely to support greater wealth accumulation:

- Greater balance-sheet liquidity can support greater wealth accumulation over time by buffering a family against financial shocks, which can lead to high-cost borrowing, distressed-asset sales, or costly default on debts and other obligations;
- Greater asset diversification—including high-return assets like stocks or a small business—can lead to greater wealth on average over time due to lower volatility for any given level of expected return on assets (or equivalently, a higher expected return for a given level of volatility),

Figure 8. Median Family Net Worth by Age of Family Head

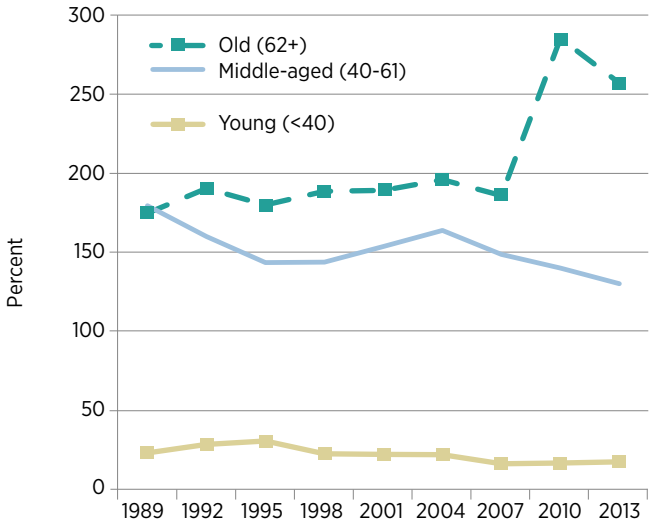


All dollar amounts are expressed in 2013 dollars, deflated by the CPI-U-RS (Consumer Price Index for Urban Consumers, Research Series).

Median family net worth is the value of total assets minus total debts for the family that ranks exactly in the middle of a ranking by net worth. The median wealth among all families declined from $85,575 in 1989 to $81,456 in 2013, or 4.8 percent. See Sidebar 2 for more information.

Unless otherwise noted, the source for all tables and figures is the Federal Reserve's Survey of Consumer Finances.

Figure 9. Median Family Net Worth Relative to Overall Median Net Worth



All dollar amounts are expressed in 2013 dollars, deflated by the CPI-U-RS (Consumer Price Index for Urban Consumers, Research Series).

Median family net worth is the value of total assets minus total debts for the family that ranks exactly in the middle of a ranking by net worth. See Sidebar 2 for more information.

The figure shows that the median net worth among families headed by someone 62 or older was 257.3 percent of the median net worth among all families. The median family headed by someone aged 40 to 61 was 130.2 percent of the overall median wealth. The median family headed by someone under 40 had 17.5 percent as much wealth as the overall median family.

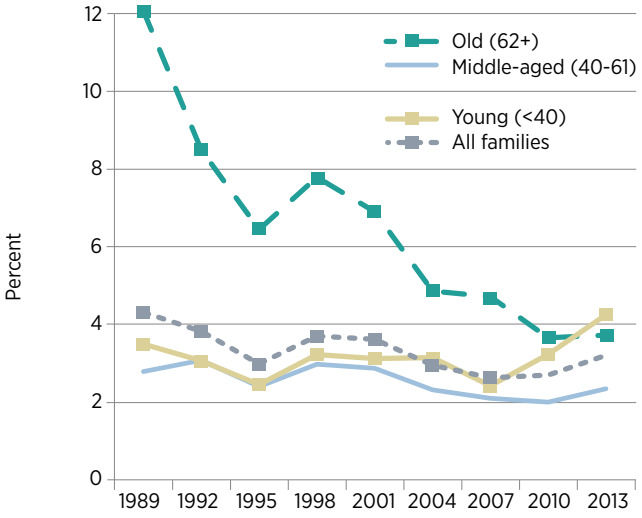
reducing the likelihood of encountering costly financial distress; and

- Lower leverage (debt-to-assets ratio) can lead to greater wealth on average over time both because borrowing itself is expensive and because balance-sheet leverage amplifies any shock to a family's asset values into larger percent changes in net worth, raising the risk of insolvency and of costly default on debt or other obligations.

These balance-sheet practices can be described as elements of prudent or conservative financial decision-making. Figure 10 shows that old families typically have much higher ratios of liquid assets to total assets than middle-aged or young families. Median young and middle-aged families have increased their holdings of liquid assets somewhat in recent years while the liquid-assets ratio declined for the median old family, making the differences much smaller across age groups. Given the larger asset holdings of middle-aged and old families, their actual holdings of safe and liquid assets still are much greater than those of young families. In 2013, the median holdings of safe and liquid assets were $82,766 among old families, $46,324 among middle-aged families and only $14,021 among young families.

Figure 11 shows that old families typically have a much greater share of their assets invested in financial and business assets, which provide both asset diversification and higher average returns in the long run than a portfolio consisting mostly of tangible assets like a house, vehicles or other durable goods.[18] In 2013, the median share of assets held in

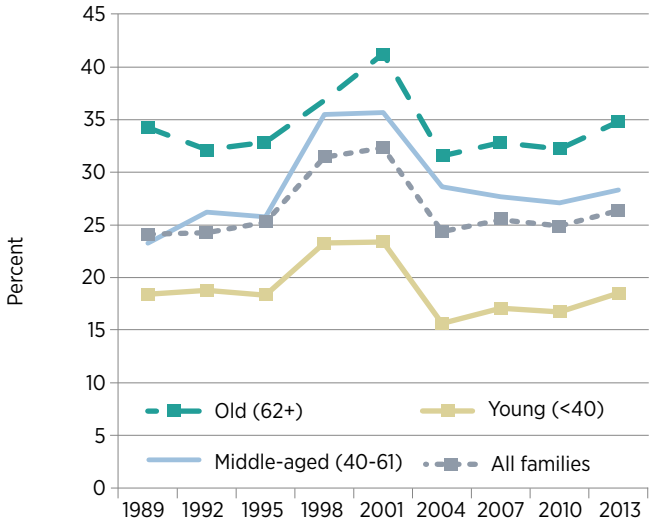
Figure 10. Median Ratio of Safe and Liquid Assets to Total Assets



Safe and liquid assets are defined as checking and saving accounts, certificates of deposits, bonds and savings bonds. These are assets that can be drawn upon quickly at low or no cost in terms of fees or potential loss of value when selling on short notice.

The figure shows the median among all families in each age group of the percent of total assets held in the form of safe and liquid assets.

Figure 11. Median Ratio of Financial and Business Assets to Total Assets



Financial assets include all securities and accounts that can be turned into cash. Business assets include the value of all privately owned businesses minus its debts, shares in private businesses minus the debts of the business for which the person is responsible, and investment real estate minus associated debt. Financial and business assets include all of a family's assets except tangible assets, which include real estate, vehicles and other real property. Financial and tangible assets are counted independently of any debts owed by the person; business assets are expressed net of the associated debt.

The figure shows the median among all families in each group of the percent of total assets held in the form of financial and business assets.

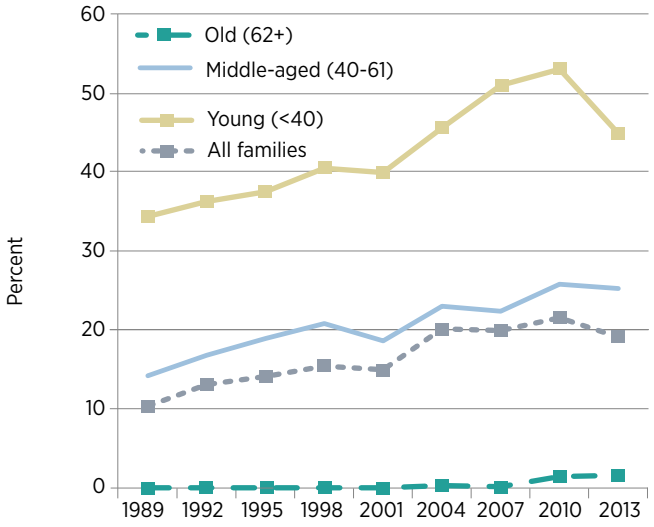
the form of financial and business assets was 34.8 percent among old families, 28.3 percent among middle-aged families and only 18.5 percent among young families. These ratios changed little on balance between 1989 and 2013.

Figure 12 shows the median ratios of debt to assets for each age group. The median old family had little or no debt throughout the period. The median debt-to-assets ratios among middle-aged families increased by 10 percentage points between 1989 and 2013, rising from 14.2 percent to 25.3 percent. Among young families, the median debt-to-assets ratio increased from 34.4 percent to 44.9 percent, with a peak of 53.0 percent in 2010.

Putting together the patterns and trends in family income and balance-sheet choices described above, we can provide two answers to the question of how the typical old family has accumulated so much wealth. Saving from peak earnings in middle age represents a crucial first step; young families simply do not have enough income, nor have they had enough time, to accumulate wealth from saving. Another ingredient appears to be prudent balance-sheet management. Substantial cash reserves remain part of the median old family's balance sheet even as income risk and balance-sheet leverage decline. Asset diversification beyond housing and durable goods into financial and business assets becomes increasingly evident as families age. Debt is paid down over time, freeing up cash flow, eliminating the high cost of borrowing and reducing the risk of costly default on any obligations.

Our data document a correlation between prudent balance-sheet management and wealth across the

Figure 12. Median Ratio of Total Debt to Total Assets



The chart shows the median of the ratio of total debt to total assets among all families in an age group.

life cycle, but we cannot identify causation. Do the diversification and debt choices of middle-age and old families cause them to be wealthier, or does greater wealth cause or allow them to be better diversified and less leveraged? We suspect there are elements of two-way causation, that is, stronger balance sheets probably do contribute to greater wealth accumulation, but it may also be the case that the passage of time—as described by the life cycle—makes it easier to diversify and pay off debt when greater wealth is available.

Nonetheless, an important question for future research is the extent to which young families might accumulate wealth more rapidly if their balance-sheet choices resembled those of old families more closely. An example would be to delay purchase of a home with its attendant debt burden until it was possible to buy a house that did not make the family's balance sheet dangerously undiversified and highly leveraged.

Financial behaviors and financial health. A third factor that may contribute to greater wealth accumulation among old families is the improving quality of routine financial decision-making over the life cycle, which we quantify with a financial health scorecard. (See Sidebar 3.) The logic behind our scorecard is that a family's ability to make good everyday financial decisions—its financial health—and its ability to accumulate wealth over time are likely to be correlated. Each financial choice we examined includes two feasible alternatives, one of which is more likely to lead to financial success. For example, saving is clearly preferred to not saving, even if only a small amount is saved. Paying one's bills on time is clearly preferred to missing a payment, and so on. For the question about credit cards, we applied a series of screens if a family did not have any credit cards. Having been denied a card or choosing not to apply because the family member expected to be rejected were scored as negative signals, earning a score of zero. Owning no credit cards by choice was a positive sign, earning a score of one.

Table 3 shows that old families demonstrated the highest average financial health scores in the period 1992-2013 by a wide margin. Because the standard errors of estimation for each group covering the entire sample ranged from 0.008 (for middle-aged families) to 0.011 (for old families), we are highly confident in a statistical sense that the average scores are different from one another. Based on our measure of financial health, old families on average make far better every-day financial choices than middle-aged families, who, in turn, make somewhat better choices than young families.

IV. Cohort Effects in Family Income and Wealth

The technical appendix contains regression results that support the hypothesis that levels of income and wealth rose during the first several decades of the 20th century, but then stopped rising for most families around mid-century. The analysis that produced these results holds constant a number of important demographic characteristics, such as age, educational attainment, race or ethnicity, family structure and health status. One explanation for stagnating income and wealth for a given set of demographic characteristics is that the arrival of the baby boomers somehow disrupted the rise of living standards. Another possibility is that the ends of the Great Depression and World War II were associated with social, political and economic changes that favored generations born before the baby boomers.

An obvious place to start is with relative cohort sizes. The idea is that relatively small cohorts may

Sidebar 3: A Financial Health Scorecard That Predicts Wealth Accumulation

To characterize the quality of basic financial decision-making by a typical family, we calculated a financial health scorecard for each family in each wave of the SCF.[19] The scorecard consists of five questions that were asked of each of the 38,385 families that participated in the survey between 1992 and 2013:[20]

- Did you save any money last year?
- Did you miss any payments on any obligations in the past year?
- Did you have a balance on your credit card after the last payment was due?
- Including all of your assets, was more than 10 percent of the value in liquid assets?
- Is your total debt service (principal and interest) less than 40 percent of your income?

How we scored the responses to these questions and the average number of points all respondents received on each question are in Table 4.[21] To investigate the predictive power of the scorecard for financial success, we split the SCF sample in each survey year into 48 unique group combinations, based on:

- Three age groups: younger than 40, 40-61, and 62 and older;
- Four education groups: less than high school diploma; high school diploma, General Educational Development (GED) certificate or vocational/technical certificate; two- or four-year college degree only; and graduate or professional degree;
- Four racial and ethnic groups: black, Hispanic, Asian and white.

The individual item and overall index scores in 2013 were remarkably similar to the averages computed over all eight waves of the SCF for which all the data were available (1992-2013). In other words, the elements of financial health we estimated appear to be stable over time.

The average group scores are financially meaningful, too—the simple correlation co-efficient between the average financial health score of a group and the 1992-2013 average of median inflation-adjusted net worth (expressed as a logarithm) for each of the 48 groups was 0.67. In other words, our financial health scorecard was very good at predicting how much wealth a group was likely to have.

Table 3. Average Group Scores for Families on the Financial Health Scorecard

	Average financial health score in all years, 1992- 2013
All families	3.01
Old: 62 or older	3.46
Middle-aged: 40-61	2.88
Young: Under 40	2.82

A family's score on the financial health scorecard is the sum of the individual scores to questions listed in Table 4, with a range of zero to five. A score of five indicates the highest financial health; a score of zero indicates the lowest financial health.

The standard errors of estimation covering the entire sample were 0.009 for young families, 0.008 for middle-aged families and 0.011 for older families. Thus, we are highly confident in a statistical sense that the average score of each group is different from each other group.

have attracted scarcity premiums in labor, housing and financial markets, whereas relatively large cohorts paid crowding penalties in those markets.[22] Figure 13 displays the number of babies (under 1 year old) in the United States between 1896 and 2015. The striking 20-percent decline in the number of infants between 1925 and 1937 likely reflects the massive economic and social disruption of the Great Depression, as well as the slowdown in the population's natural growth rate after earlier high immigration rates declined. The infant population began to rise again in the late 1930s, but it was not until 1945 that the size of this population reached the level of 20 years earlier. Thus, these very small birth-year cohorts may have been favored later in life in a variety of ways, including relatively higher earnings, lower house prices and stronger growth in financial-asset prices. Sociologist Elwood Carlson called the generation born between 1929 and 1945 "the lucky few" precisely because it was the

Table 4. Questions in the Financial Health Scorecard

Questions	Scoring	Mean score in eight SCF waves, 1992-2013	Mean score in 2013 SCF only
1. After adjusting for any purchases of durable goods or investments you made, did you spend more, the same or less than your income in the past year?	Less = 1; Same or more = 0	0.56	0.53
2. Does either of these statements apply to you? "We sometimes got behind or missed payments;" or "Considering all the various loan or mortgage payments we made during the last year, not all of the payments were made the way they were scheduled; sometimes, they were made later or missed."	No, neither one applies = 1; Yes, one or both apply = 0	0.84	0.85
3. Do any of these statements apply to you? "We carried over a credit-card balance after we made our last payment;" or "We have been turned down in the past five years by a particular lender or creditor when I (or my {husband/wife/partner}) made a request for credit, or we were not given as much credit as we applied for;" or "There was a time in the past five years that we thought of applying for credit at a particular place, but changed our minds because we thought we might be turned down."	No, none applies or no credit cards by choice = 1; Yes, one or more apply = 0	0.44	0.47
4. Including all of your assets, was more than 10 percent of the value in safe and liquid assets, defined as liquid accounts (checking, saving or money-market accounts), certificates of deposits, bonds or savings bonds?	Yes = 1, No = 0	0.27	0.26
5. Is your total debt service, including both scheduled repayment of principal and interest owed, less than 40 percent of your income?	Yes = 1, No = 0	0.91	0.92
Total score	0 to 5 possible	3.01	3.03

A family's score on the financial health scorecard is the sum of the individual scores, with a range of zero to five. A score of five indicates the highest financial health; a score of zero indicates the lowest financial health.

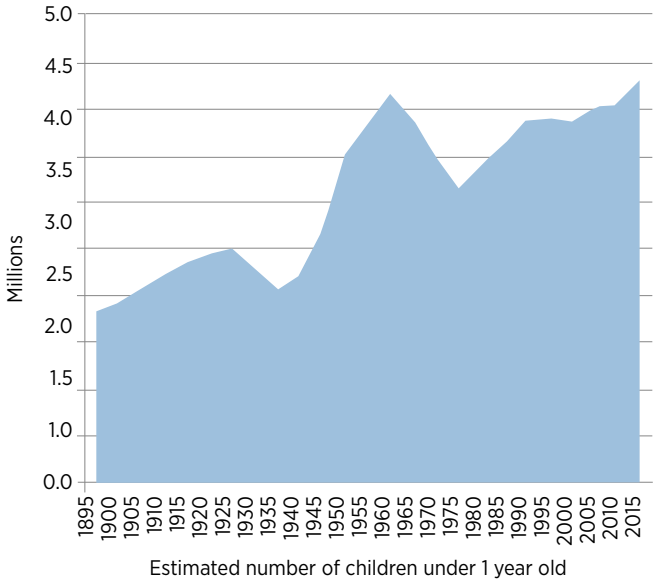
Splitting the sample in each SCF wave into 48 unique groups, based on three age groups (less than 40, 40-61, and 62 and over), four education groups (less than high school, high school or GED or vocational/technical certificate, two- or four-year college only, and graduate or professional degree), and four racial and ethnic groups (African-American, Hispanic of any race, Asian and non-Hispanic white), the simple correlation co-efficient between a group's average financial health scorecard score for 1992-2013 and the group's inflation-adjusted median logarithm of net worth averaged across the eight waves is 0.67.

first American generation to be smaller in number than those that came before. Carlson argued that African-Americans and women born in those years also enjoyed historically unprecedented opportunities throughout their adult lives.

The infant population recovered during the baby boom that began in the 1940s. Peaking in the early 1960s, the infant population doubled in little more than two decades. Given trends in births both before and after, the baby boom now appears to have been a historical aberration. Hence, it is plausible that baby boomers suffered from crowding in labor, housing and financial markets. This may have resulted in unfavorable developments in income and wealth accumulation.

Another set of explanations of the apparent end of rising levels of income and wealth for a given set of demographic factors relates to changes in economic growth and social policies. Post-World War II economic growth was very rapid, and the value of housing and financial assets increased strongly. Rather than attracting any special advantages related to their absolute numbers, people born in the first half of the 20th century simply may have

Figure 13. Estimated Number of Children under 1 Year Old



SOURCES: Census Bureau and authors' own estimates.

been in the right place at the right time as they were lifted by a rising tide. A related channel of causation is the postwar expansion of the safety net, especially for retired people. The steadily increasing generosity of Social Security, the creation of Medicare in the 1960s and, 40 years later, the significant expansion of Medicare in the prescription drug benefit greatly increased the resources directed to adults reaching retirement age in the 1990s and 2000s.

Will the favorable income and wealth trends observed among today's old adults resume at some point? We cannot know for sure, but it appears unlikely that baby boomers—who are just now entering retirement in large numbers—will accrue the same incomes and wealth that pre-baby boomers received for given demographic characteristics. First, the baby boomers already have significantly lower demographically adjusted incomes and wealth, as we documented above. There is little time to make up these shortfalls and little reason to believe that social policies will change to assist these adults. Second, reductions in social programs that help old adults appear to be more likely than increases.

Among cohorts born after the baby boomers, the members of Generation X stand out for having low incomes and wealth for a given set of demographic characteristics. Someone born in the 1970 cohort, for example, appears to have an income 25 percent lower and wealth 40 percent lower than an otherwise identical person born in 1940. Given their youth, it is impossible to say whether or to what extent people born in the 1980s and 1990s will fare better in the years ahead. The most we can say is that there is, as of 2013, no convincing evidence that the millennials will do appreciably better than the members of Generation X.

V. Conclusion

We documented a very strong association between a family head's age and the family's level of income and wealth. There also is a strong association between age and several indicators of balance-sheet strength and financial health. If anything, the associations have become stronger over time, and the gaps between age groups have widened.

We also found evidence of significant birth-year cohort effects on income and wealth. Family heads born about 1940 earned higher incomes and accumulated more wealth than family heads born before or later, holding constant a host of demographic, idiosyncratic and period-specific factors.

Technical Appendix

Disentangling the Effects of Birth Year, Life-Cycle Stage and Historical Time Period on Income and Wealth: A Regression Analysis

Multiple-regression analysis helps us sort out and quantify life-cycle, birth-year cohort and other factors' influences on income and wealth in the SCF. To be sure, we would be much more confident about our estimates if we had data for hundreds of thousands of families observed over many decades or, even better, thousands of the same families observed over their entire life cycles. Instead, we have only about 40,000 family observations collected over a 24-year period in a series of cross sections. Key assumptions, such as the constancy of life-cycle effects over time and across cohorts and the lack of important interaction effects among the independent variables, must be kept, therefore, in mind. Nonetheless, the exploratory models we describe here appear to provide important insights into the demographics of income and wealth. We highlight cohort effects in what follows.

Cohort effects in family income. Table 5 contains estimation results from a regression of the logarithm of family income on demographic, idiosyncratic, birth-year cohort and time variables. We have 41,485 observations across the nine survey waves, and the fit of the pooled regression model is good. The R^2 is 43.3 percent, and estimated levels of statistical significance are high for many coefficients.

We regressed the logarithm of family income in a given year on a cubic function of age to control for life-cycle effects; on standardized (that is, demeaned by the family's demographic profile) measures of marital status, family size, saving behavior and health status to isolate idiosyncratic factors potentially correlated with wealth accumulation; on education and race or ethnicity indicators to capture the effects of human capital, social class and potential legacies of discrimination; on year dummies to capture time effects during the year of observation; and, of primary interest, on a large set of birth-year cohort indicator variables.

We constructed five-year birth-year cohorts, beginning with families born between 1898 and 1902. We refer to this as the 1900 cohort. The last cohort includes family heads born between 1988 and 1992, or the 1990 cohort. We chose the 1940 cohort as the omitted category because it is near the middle of the sample of birth years and because it turns out to be a good example of families that appeared to experience an unusually favorable cohort effect.

Estimates of the coefficients on demographic and idiosyncratic variables are reported in the upper portion of Table 5. In general, the estimates are highly significant with the expected signs. Family income rises with the age of the family head, but it grows at a decreasing rate. There is an important degree of curvature in the age-income profile, too. Idiosyncratic factors reliably associated with increases in family income include marital status, having more children than average, saving money regularly and enjoying above-average health.[23] Higher levels of educational attainment are very strongly predictive of higher income. The regression results imply that, if all other factors are held constant, being African-American or Hispanic predicts significantly lower income than an otherwise similar Asian family (the excluded category). Asian families, in turn, earn significantly lower incomes than whites.

Time dummies for the 1989–2013 sample dates are shown near the bottom of Table 5. The significant values on the estimated coefficients for the 2001, 2004 and 2007 dummy variables imply that families' incomes generally were higher than would have been expected based on the overall sample. Equivalently, incomes in 1992, 1995, 1998, 2010 and 2013 appear more "normal" in that they were not significantly different from incomes in 1989, the omitted year.

The variables of greatest interest in Table 5 are the cohort dummy variables. Figure 14 displays the information contained in the coefficient estimates, which we interpret as the marginal effect of a family's birth cohort on its inflation-adjusted income. If

Table 5. Pooled Regression of Logarithm of Family Income on Demographic, Idiosyncratic, Birth-Year-Cohort and Time Variables

Variable	Beta	T-Statistic
Intercept	868.36	31.53
Age in years	14.41	12.18
Age squared	–0.186	–8.62
Age cubed	0.00	5.40
Standardized marital status	95.05	68.61
Standardized number of children	4.01	6.71
Standardized saving indicator	18.60	14.35
Standardized health status	49.30	29.68
High school dropout indicator	–175.55	–82.21
High school graduate or GED indicator	–124.99	–81.97
Some college indicator	–89.52	–49.81
College graduate (omitted)		
White indicator	29.42	9.26
African–American or black indicator	–35.29	–9.69
Hispanic of any race indicator	–17.85	–4.57
Asian or other (omitted)		
Birth year 1898–1902 indicator	3.65	0.14
Birth year 1903–07 indicator	–3.88	–0.21
Birth year 1908–12 indicator	–27.39	–1.87
Birth year 1913–17 indicator	–23.34	–1.93
Birth year 1918–22 indicator	–21.40	–2.21
Birth year 1923–27 indicator	–18.43	–2.47
Birth year 1928–32 indicator	–14.87	–2.64

Variable	Beta	T-Statistic
Birth year 1933–37 indicator	–4.11	–1.02
Birth year 1938–42 (omitted)		
Birth year 1943–47 indicator	–4.08	–1.11
Birth year 1948–52 indicator	–15.26	–2.94
Birth year 1953–57 indicator	–13.17	–1.88
Birth year 1958–62 indicator	–17.35	–1.92
Birth year 1963–67 indicator	–23.10	–2.08
Birth year 1968–72 indicator	–25.39	–1.93
Birth year 1973–77 indicator	–17.49	–1.14
Birth year 1978–82 indicator	–18.42	–1.06
Birth year 1983–87 indicator	–16.30	–0.83
Birth year 1988–92 indicator	–12.19	–0.55
Year 1989 (omitted)		
Year 1992 indicator	–2.86	–0.87
Year 1995 indicator	–4.02	–1.03
Year 1998 indicator	2.16	0.45
Year 2001 indicator	16.23	2.77
Year 2004 indicator	17.11	2.45
Year 2007 indicator	23.47	2.87
Year 2010 indicator	–7.78	–0.84
Year 2013 indicator	–6.28	–0.60
R-squared of first regression	.433	
Observations	41,485	

NOTE: GED = General Educational Development test. Dependent variable is logarithm of inflation-adjusted family income in year *t*, excluding all nonpositive observations. Sample years are 1989, 1992, 1995, 1998, 2001, 2004, 2007, 2010 and 2013. Coefficients are expressed in percent; for example, the value –17.35 for birth year 1958–62 indicator means negative 17.35 percent.

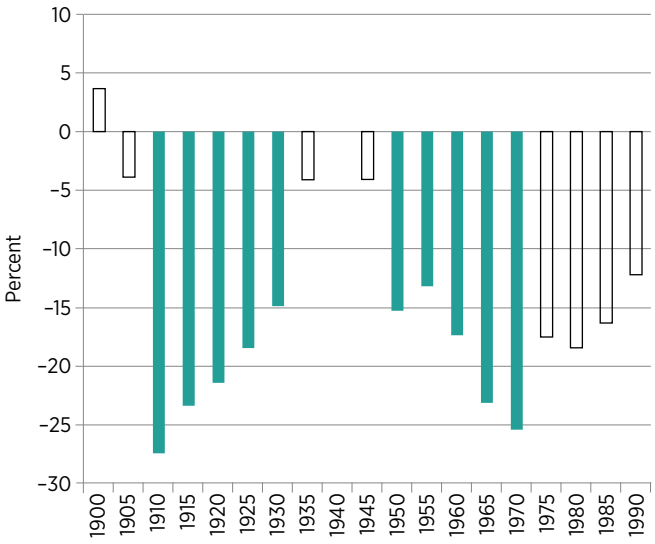
Unless otherwise noted, the source for all tables and figures is the Federal Reserve's Survey of Consumer Finances.

there were no birth-year cohort effects determining family income, all of these parameter estimates would be statistically indistinguishable from zero. Coefficient estimates that are statistically different from zero at the 10 percent level are shown as dark-colored bars; those that are not statistically sufficient are light-colored.

As it turns out, cohort effects on income appear to be important. Families born in the five years centered on 1940 (the omitted group in the regression) do not differ to a statistically significant degree from those born during the 1900 or 1905 cohorts. It may be that there really are cohort effects, but the small number of sample members born before 1908 leads to imprecise estimates—or there may be no such effects. Survivorship bias also may be important because those family heads born before 1908 and still alive at the time of the surveys may not be representative of the entire original cohort to which they belong. In particular, they may be relatively better off in terms of health, education, lifetime earnings and wealth.

All cohorts between 1910 and 1930 (including family heads born between 1908 and 1932), however, have statistically significantly lower incomes than those of families with heads born in the 1940 cohort

Figure 14. Marginal Effect of Family Head's Birth Year on Logarithm of Family Income Relative to Being Born in the Period 1938-42



Bars represent the estimated percentage difference in income between a family in a five-year birth-year cohort centered around the given year and the cohort of families with heads born in the five-year cohort centered around 1940. The bars are co-efficient estimates from the regression reported in Table 5.

Solid green bars are statistically different from zero at the 10-percent confidence level. Outlined bars are not statistically significantly different from zero at the 10-percent confidence level.

(1938-42). The estimated magnitudes of difference—increasing monotonically from a 27 percent lower level among the 1910 cohort to a 15 percent lower level among the 1930 cohort—are consistent with a generally rising level of family income across successive birth-year cohorts: Typical levels of income rose with overall standards of living.

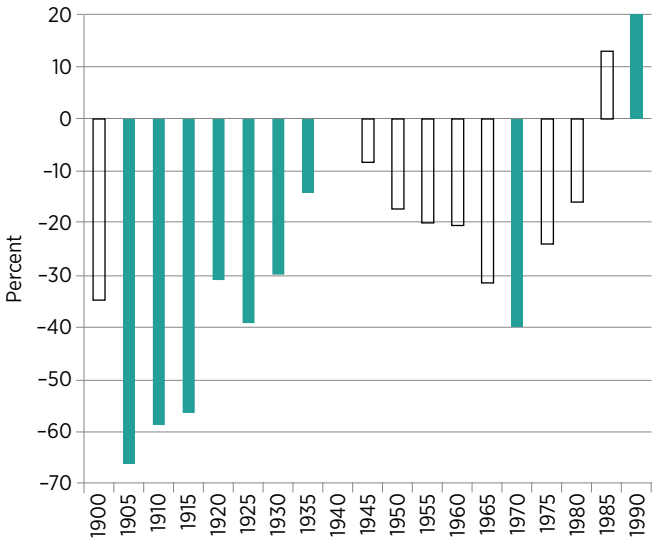
In terms of family income, the regression results suggest that families headed by someone born in the 1935, 1940 or 1945 cohort (that is, between 1933 and 1947) are statistically indistinguishable from one another. However, beginning with the 1950 cohort (i.e., families headed by someone born between 1948 and 1952), successive cohorts through 1970 (born between 1968 and 1972) had statistically significantly lower incomes than those of the 1940 cohort. Moreover, the estimated magnitudes are economically significant: between 13 and 25 percent lower than the 1940 cohort. Finally, all five-year cohorts that began in 1975 or later had estimated income shortfalls of 12 to 18 percent. However, these effects were not measured precisely. The fading of a statistically significantly negative cohort effect after the 1970 cohort may be due to a true diminution of the effect or it may be due to relatively small sample sizes and high variability among younger families' incomes.

Cohort effects in family net worth. Given evidence of important cohort effects in family income, it would not be surprising to find similar effects in family wealth. After all, unusually high incomes for the 1935, 1940 and 1945 cohorts might have supported higher saving rates than those observed among earlier- and later-born cohorts.

A logarithmic specification of net worth is problematic because about 8 percent of all family-year observations of net worth are zero or negative in the SCF. Dropping these observations could alter our estimates of important relationships in the data because we know the dropped observations would not be a random sample of the population. Instead, they are much more likely to be young, less-educated and nonwhite families. They also would be more likely to be baby boomers and members of Generation X.

An alternative transformation of net worth—the inverse hyperbolic sine (IHS) function—allows us to include zero or negative wealth observations while retaining an interpretation of results that is similar to the interpretation of results in the log model.[24] We applied the Halvorsen–Palmquist transformation to coefficient estimates of indicator variables and report the results in Table 6, which presents estimates for a set of independent variables that is identical to the set used in the log of income specification with one exception. We include the standardized—that is, de-meaned–square root of family income to capture idiosyncratic variations in family income—that is, an income that is unusually high or low compared with the family's demographically predicted income, holding constant all of the other variables included in the model. It is important to control for unusual circumstances, like lottery winners or people who have suffered large business losses, in order to separate the random effects of income (windfalls and catastrophes) from wealth accumulation. The R^2 is 66.2 percent, and estimated levels of statistical significance are high for many coefficients.

Figure 15. Marginal Effect of Family Head's Birth Year on Transformed Family Wealth Relative to Being Born in the Period 1938-42



Bars represent the estimated percentage difference in wealth between a family in a five-year birth-year cohort centered around the given year and the cohort of families with heads born in the five-year cohort centered around 1940. The bars are co-efficient estimates from the regression reported in Table 6.

Solid green bars are statistically different from zero at the 10-percent confidence level. Outlined bars are not statistically significantly different from zero at the 10-percent confidence level.

The co-efficient estimate for the 1990 cohort is 150.0, but the number of observations is very small.

Figure 15 illustrates our estimates of the birth-year cohort's marginal effect on a family's wealth. As before, the wealth regression holds demographic, idiosyncratic and time effects constant. The dark-colored bars in the figure represent effects that are statistically significant at the 10-percent level, while the light-colored bars represent effects that are not significant.

The marginal effect on wealth of being born during 1898-1902 rather than during 1938-42 is not statistically significantly different than zero, even though the point estimate is about negative 35 percent. The small number of family heads born around 1900 and still alive in 1989 makes the estimate imprecise. Beginning with the 1905 cohort, however, all cohorts through 1935 appear to have statistically significantly less wealth than the 1940 cohort, holding constant many other factors. The shortfalls rise from negative 66.2 percent to 14.2 percent, and they generally are estimated precisely.

We cannot distinguish between the wealth of the 1940 and 1945 cohorts, and the estimated co-efficient on the 1945 cohort is small. Cohorts between 1950 and 1965 have decreasing point estimates between negative 17.2 and negative 31.5 percent, but none of them is estimated precisely. The point estimate for the 1970 cohort is negative 40.0 percent, and it is marginally significant. Estimates are imprecise between 1975 and 1985. The 1990 estimate is large, positive and statistically significant, but we hesitate to attach any importance to it because it represents a small group of very young families.

Table 6. Pooled Regression of Transformed Family Net Worth on Demographic, Idiosyncratic, Birth-Year-Cohort and Time Variables

Variable	Beta	T–Statistic
Intercept	–41.34	–0.79
Standardized square root of income	0.30	125.96
Age in years	26.53	8.24
Age squared	–0.10	–1.84
Age cubed	0.00	–1.25
Standardized marital status	401.42	47.84
Standardized number of children	6.44	4.32
Standardized saving indicator	79.67	18.97
Standardized health status	218.41	29.77
High school dropout indicator	–98.68	–82.84
High school graduate or GED indicator	–94.65	–77.35
Some college indicator	–88.27	–49.80
College graduate (omitted)		
White indicator	50.12	5.40
African-American or black indicator	–83.46	–20.66
Hispanic of any race indicator	–67.00	–11.81
Asian or other (omitted)		
Birth year 1898–1902 indicator	–34.84	–0.63
Birth year 1903–07 indicator	–66.22	–2.37
Birth year 1908–12 indicator	–58.85	–2.48
Birth year 1913–17 indicator	–56.53	–2.86
Birth year 1918–22 indicator	–30.97	–1.58
Birth year 1923–27 indicator	–39.27	–2.74
Birth year 1928–32 indicator	–29.94	–2.62

Variable	Beta	T–Statistic
Birth year 1933–37 indicator	–14.23	–1.60
Birth year 1938–42 (omitted)		
Birth year 1943–47 indicator	–8.32	–0.98
Birth year 1948–52 indicator	–17.31	–1.49
Birth year 1953–57 indicator	–19.99	–1.29
Birth year 1958–62 indicator	–20.48	–1.03
Birth year 1963–67 indicator	–31.53	–1.39
Birth year 1968–72 indicator	–39.96	–1.57
Birth year 1973–77 indicator	–24.04	–0.73
Birth year 1978–82 indicator	–15.98	–0.41
Birth year 1983–87 indicator	13.03	0.25
Birth year 1988–92 indicator	149.98	1.68
Year 1989 (omitted)		
Year 1992 indicator	–1.66	–0.21
Year 1995 indicator	0.32	0.03
Year 1998 indicator	–0.50	–0.04
Year 2001 indicator	17.86	1.13
Year 2004 indicator	–4.91	–0.29
Year 2007 indicator	2.01	0.10
Year 2010 indicator	–49.83	–3.00
Year 2013 indicator	–58.82	–3.41
R squared of first regression	.662	
Observations	41,485	
Scaling parameter, theta	.0001	

NOTE: GED = General Educational Development test. Dependent variable is inflation-adjusted net worth after application of the inverse hyperbolic-sine transformation: ASINH(Net Worth * Theta)/Theta, where Theta = .0001. Estimates shown for coefficients for indicator variables are expressed after application of the Halvorsen-Palmquist transformation {100 * [exp(theta * beta) – 1]}. Sample years are 1989, 1992, 1995, 1998, 2001, 2004, 2007, 2010 and 2013. Interpretation of coefficients for indicator variables is analogous to the log specification; for example, the value –20.48 for birth year 1958–62 indicator means negative 20.48 percent.

Endnotes

1 See Emmons and Noeth (2015a, 2015b).
2 See Bricker et al. for an extensive discussion of the SCF design and methodology.
3 See Bricker et al. for information on how the head of a family is determined in the SCF.
4 See Census Bureau.
5 See Bureau of Labor Statistics.
6 See Bureau of Labor Statistics.
7 See Bricker et al.
8 In this essay, we use the term "white" to mean non-Hispanic white. We use the terms "black," "non-Hispanic black" and "African-American" interchangeably. Hispanics may be of any race. The category "Asian or other origin" includes not only people with origins in Asia but also those who identify as American Indian, Alaska native, native Hawaiian or Pacific Islander. Because Asians represent about 80 percent of this group in population estimates published by the Census Bureau, we refer to the group as Asian in what follows.
9 We provide detailed information about each of these financial indicators in the next section.
10 This is somewhat surprising given the significant and increasing over-representation of nonwhites among young families and the over-representation of whites among old families during this period. It turns out that the shares of middle-aged families represented by each of the four racial and ethnic groups changed at about the same rate as their respective population shares between 1989 and 2013. For example, the white share of middle-aged families declined from 75.9 percent in 1989 to 69.8 percent in 2013. The white share of all families declined from 74.8 percent to 70.1 percent; so, whites moved from being slightly over-represented among middle-aged families in 1989 to being slightly under-represented in 2013.
11 Whites made up 69.8 percent of middle-aged families and 60.7 percent of young families in 2013.
12 See Howe and Elliott.
13 Survivorship bias may be important in explaining the failure of median wealth to decline at advanced ages. If families with higher average wealth tend to live longer—for example, families with more education—then the median wealth among the surviving population at any time could be constant or increasing even if most individual surviving families' wealth levels are declining because low-wealth families are disappearing more rapidly. This is one reason why we use a regression framework below. It allows us to hold constant a number of important demographic, idiosyncratic and time-period influences on income and wealth to isolate cohort effects.
14 These statistics about race for the silent generation represent family heads born during 1928-49.
15 These statistics refer to middle-aged families observed in the 2004 SCF, representing birth years 1943-64.
16 These statistics refer to young families observed in the 2004 SCF, representing birth years 1965-86.
17 See Emmons and Noeth for discussion of trends in educational attainment (2015b).
18 See Emmons and Noeth (2013, Tables 1 and 2) for evidence from the Survey of Consumer Finances that financial assets have produced much higher returns than housing over long time periods.
19 See Emmons and Noeth (2014) for more discussion of the scorecard and its correlation with wealth accumulation.
20 We excluded 1989 because it did not contain a satisfactory version of the first question in our scorecard.
21 The questions in the text are paraphrases; the precise wording of the questions is in Table 4.
22 Easterlin documents the influence of cohort size on economic and social outcomes with particular emphasis on the baby boom generation.
23 The explanatory variables expressed in standardized form are simple deviations from a family's predicted value of that variable based on its demographics. For example, a family with three children when its age-, education- and race/ethnicity-predicted value was two is coded as one. A family's health status is expressed as the difference between its actual reported health status and the average of its demographic group, and so on.
24 See Pence (2006) and Gale and Pence (2006) for extensive discussion and application of the IHS transformation to balance sheet data.

CD15-32466 07-15

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