THE SIGHTLINES PROJECT

Seeing Our Way to Living Long, Living Well in 21st Century America

February 2016

STANFORD CENTER ON LONGEVITY

"The Sightlines Project shows a way to a better future for Americans as they live longer than ever in history. It provides a data-driven analysis for researchers, industries, and the public sector to use as the nation begins to capitalize on one of the greatest opportunities of our times."

John L. Hennessy
President, Stanford University

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EXECUTIVE SUMMARY

The developed world is bearing witness to a 21st-century miracle – the possibility of living well to the age of 100 and beyond. Three out of four Americans indicate that they want to live to 100 if they can do so in good health.[1] Compelling scientific evidence indicates that living long and living well is most realistic for those who are socially engaged, adopt healthy living behaviors and are able to build financial security.

THE SIGHTLINES PROJECT investigates how well Americans are doing in each of these three areas that are critical to wellbeing as people age: financial security, healthy living and social engagement. The findings are based on analyses of eight nationally representative, high quality, multi-year studies involving more than 1.2 million Americans over two decades. We look at how many Americans in each of six age groups are doing well in each area, rather than how well the "average" American is doing. These results are intended to stir national debate, guide policy development, stimulate entrepreneurial innovation, and encourage personal choices that enhance independent, 100-year lives.

Compelling scientific evidence indicates that living long and living well is most realistic for those who are socially engaged, adopt healthy living behaviors and are able to build financial security.

KEY FINDINGS

Healthy Living, defined as avoiding risky behaviors (smoking, excessive drinking, drug use, etc.) and making healthy choices day to day (diet, exercise, etc.), is known to be beneficial for long and healthy lives. Americans have made substantial progress in several areas, while other problems remain or have actually worsened. Smoking – the top preventable cause of morbidity and early mortality – is declining in every age group. For the first time in decades, more Americans are exercising regularly. More than half of Millennials (ages 25 to 34) are getting the recommended amount of exercise. Yet, sitting, which has emerged as an independent risk factor for health, is steeply increasing. Finally, problems with diet and sleep are widespread and show no signs of abating.

Financial security across the life span presents a growing challenge for longer lives. Financial security is less likely for Americans in 2014 compared to 2000, particularly among the least educated, who are more likely to live at or near the poverty level, lack emergency resources, and are less likely to have investments that contribute to their financial futures. Millennials (ages 25 to 34) are facing ever greater uphill struggles. Those who went to college are 50 percent more likely to carry debt. Moreover, the average debt in this group is five times higher than 25- to 34-year-olds carried just 15 years ago. Fewer Americans (two out of three) are opening retirement accounts before age 55. Among those ineligible for employer-based plans, such as independent contractors, for example, only one in three has a retirement plan.

One encouraging sign: the 15-year decline in health insurance coverage among the most vulnerable (those without high school education) has been reversed since the implementation of the Affordable Care Act, decreasing the likelihood that the financial status of this segment of society will limit access to care when health is threatened.

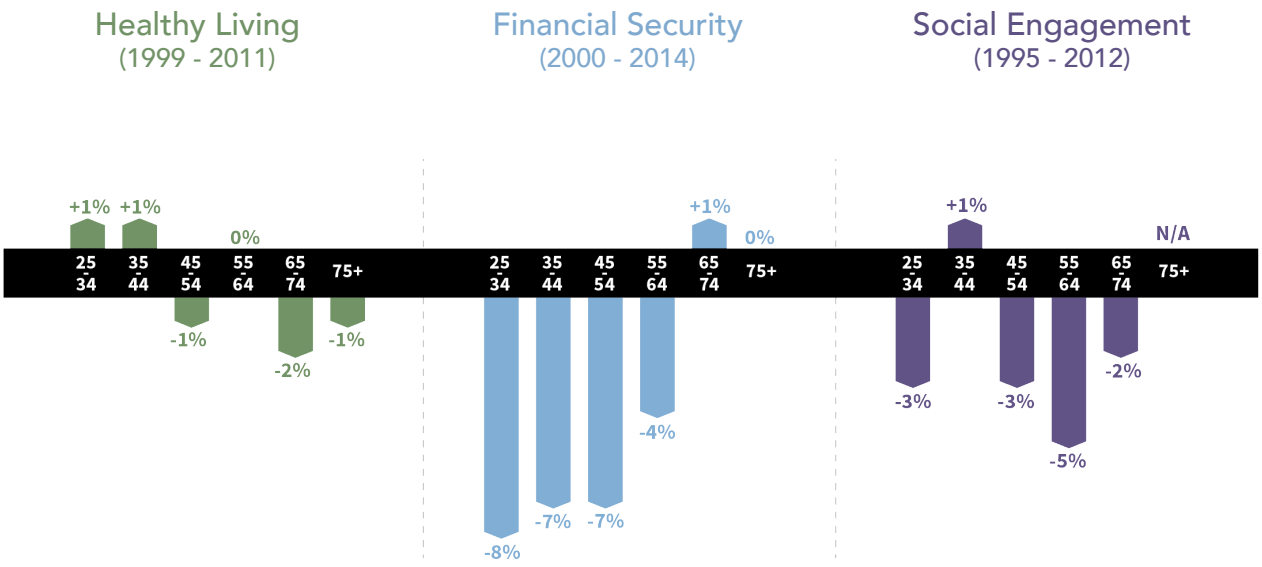
Social engagement, central to long and healthy lives, includes both meaningful relationships and participation in communities. Social engagement is declining according to many traditional indicators. It is too soon to tell whether new forms of technology-mediated social engagement – SMS, chat, video telephony, posting and tweeting – are providing social benefits and how they may complement face-to-face engagement. Interactions with neighbors – whose proximity could be especially helpful in times of stress or emergencies – are becoming less common. Compared to 55- to 64-year-olds of 20 years ago, members of the Baby Boom generation are less likely to be married, have weaker ties to family, friends, and neighbors, and are less likely to engage in religious or community activities. Longer lives mean that individuals are less likely to lose a life partner. Among Americans over 75, 53 percent are married, up from 42 percent in 2003.

CONCLUSION

There are signs of progress and reasons to be concerned about the ways in which Americans are positioned for longer lives. Effective actions to address these issues via policies, awareness and innovation can improve individual and national wellbeing as we enable and prepare for living well and living long in 21st century America. We look forward to engaging the American public, employers, industry leaders, and policy makers in essential discussions aimed at finding solutions to problems and ultimately building a culture that supports long life.

THE FINDINGS

Given that longer lives are a relatively recent phenomenon, it is not surprising that Americans are not yet optimizing for longevity and wellbeing. Averaging the percentage of Americans within each age group who were doing well on each of the nine metrics in each of three areas, we can compare how well each age group is doing relative to one another, over time, and across domains. At this level of specificity, no age group is showing evidence of substantial improvement. The most obvious change over time is in the declining percentage of Americans doing well on financial security indicators.



Looking at each domain, and drilling down to the individual metrics, there are reasons for concern along with reasons for optimism. These trends can help us consider the many ways in which we as individuals, and as a country, can improve our trajectories.

FINANCIAL SECURITY

THE FUNDAMENTALS

Financial resources are essential in order to live longer and better lives. With adequate financial resources, we can expect:

- lower rates of chronic illness, disability and death; [2] [3] [4]
- higher life satisfaction; [5] [6]
- higher rates of social engagement, connectedness and stronger relationships with spouses and partners; [7] [8]
- cushioning from a range of negative life events like illness, disability, economic downturns and job loss. [9]

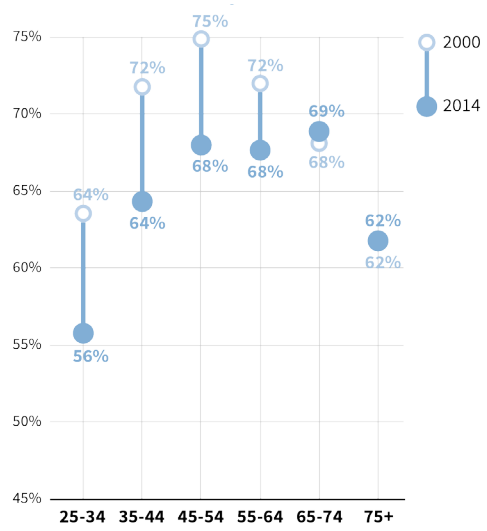
Despite recovery in jobs, stock and real estate markets since the Great Recession, more Americans in the 21st century are struggling to achieve even a measure of financial security. With an additional 17 years of life expectancy for men, and an additional 20 years for women compared to 1940,[10] there are greater opportunities and risks. If additional years are added after retirement, people have fewer years to amass income and savings for more retirement years. [11] In the words of Stanford University Professor of Economics John Shoven, "Few workers can fund a 30-year retirement with a 40-year career."[12] This added pressure on finances makes it all the more critical that we maximize earnings, invest wisely and protect our assets from catastrophic events.

AN OVERVIEW

The financial security index used here is the average of nine key financial metrics that include three types of activities critical to financial wellbeing: healthy cash flow, asset investments and protection. The specific metrics, such as the percentage of those able to meet a $3,000 emergency, are listed below the figure. These percentages are averaged to indicate the average percentage of Americans in each age group living in households that are doing well. Comparing these metrics over time within age groups provides a trajectory for each decade of life, indicating whether this group is headed in a positive or negative direction.

The financial security findings are clear. Fewer Americans under age 65 have ensured their financial security through a healthy cash flow, asset investments and protection against loss either through insurance or through savings. The results for the 25-to 34-year-old age group are most troubling – fewer than two out of three in this group met the criteria in 2000, our baseline year. In 2014, eight percent fewer were doing well. Other age groups also saw a decline, but from a higher base. There is remarkably little change for those 65 or older.

Financial Security Index



Included in Index:
Cash Flow: Threshold earnings, emergency resources, uncollateralized debt
Growing Assets: Home ownership, retirement plan participation, investments,
Protection: Health insurance, life insurance, long-term disability or long-term care

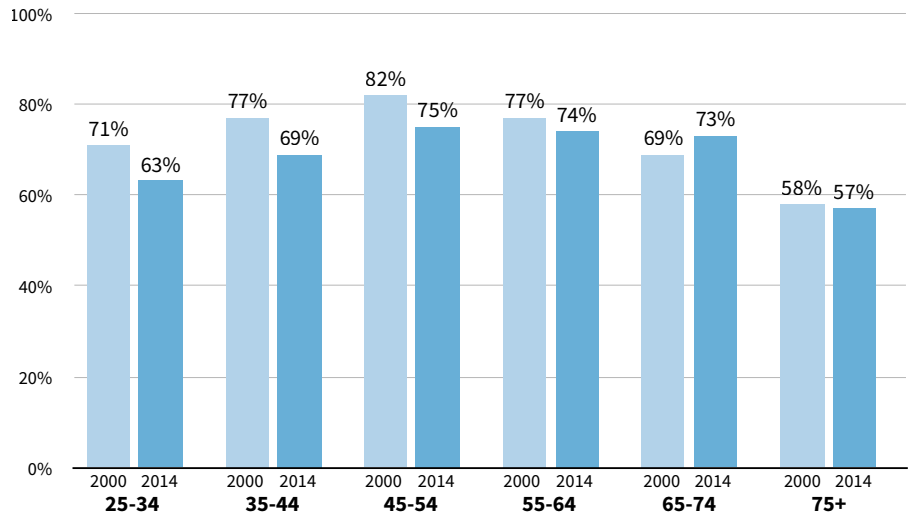
THE SPECIFICS

It starts with an erosion in cash flow

Cash flow (which includes earnings, debt burden and emergency reserves) is critical to immediate financial wellbeing and key to planning for the future. A balanced cash flow ensures that financial needs are met and debt is well-managed. Americans are less able to generate, and/or are not in a position to manage cash flow to effectively promote financial wellbeing. Cash flow trends indicate a decidedly downward trajectory for those aged 25 to 54 since our baseline year of 2000.

Lower earnings, more poverty

Threshold Income



Data Source: Current Population Survey (CPS)

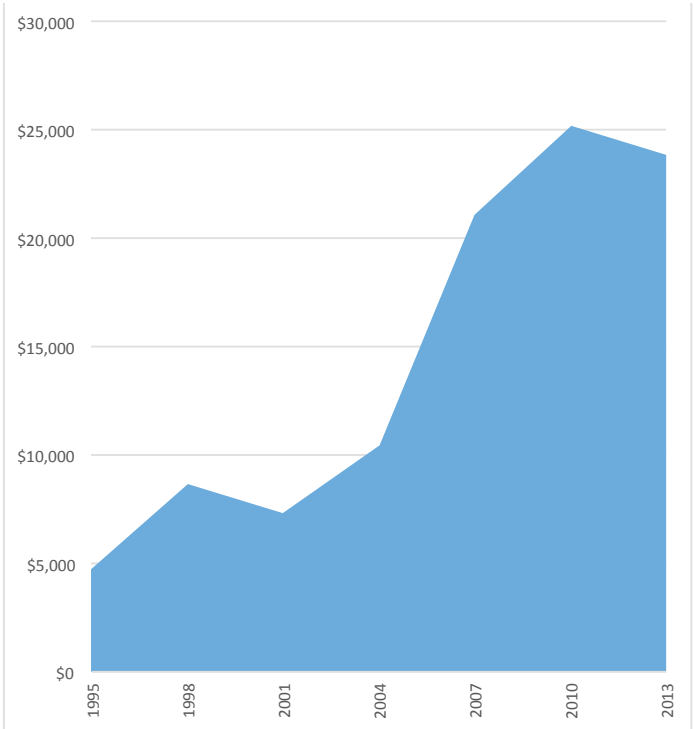
> *More than one out of three 25- to 34-year-olds were living at or near poverty levels in 2014.*

More Americans are living below or near poverty (defined here as 200 percent of the federal poverty level). More than one out of three 25- to 34-year-olds were living at or near poverty levels in 2014. Americans without high school diplomas and women are at greater and increasing disadvantage. Some 34 percent of women in 2014 versus 28 percent just 14 years ago are in households with incomes below or near federal poverty lines.

Explosion in debt, particularly among the young

Debt from student loans, credit cards and other sources is now pervasive. More than half of those aged 35 to 64, and two thirds of those aged 25 to 34, are in debt. Strikingly, nearly one-third of Americans under 35 are carrying debt in excess of 20 percent of their household income, and just over one-quarter were in debt in excess of 30 percent of their income – a 136 percent increase in under 20 years.

Average student debt for college



Data Source: Survey of Consumer Finances (SCF)

Among all college graduates, 25 to 34 years old, student debt has risen five fold since 1995 to just under $24,000. Among just those with student debt, the average debt is now more than $47,000. While many can handle these debt loads on a monthly basis, it may be at the cost of delayed investments such as home purchases or contributions to retirement plans.

Increased vulnerability to financial emergencies

A critical metric of financial wellbeing is the ability to handle unexpected emergencies. Americans are sliding in this regard as well. Eighty percent of Americans in 2000 could manage a $3,000 emergency, but fewer than three in four could do so in 2013. Those without a high school diploma are in the weakest position. Importantly, the hypothetical $3,000 emergency is not adjusted for inflation, meaning that this increase is actually an underestimate.

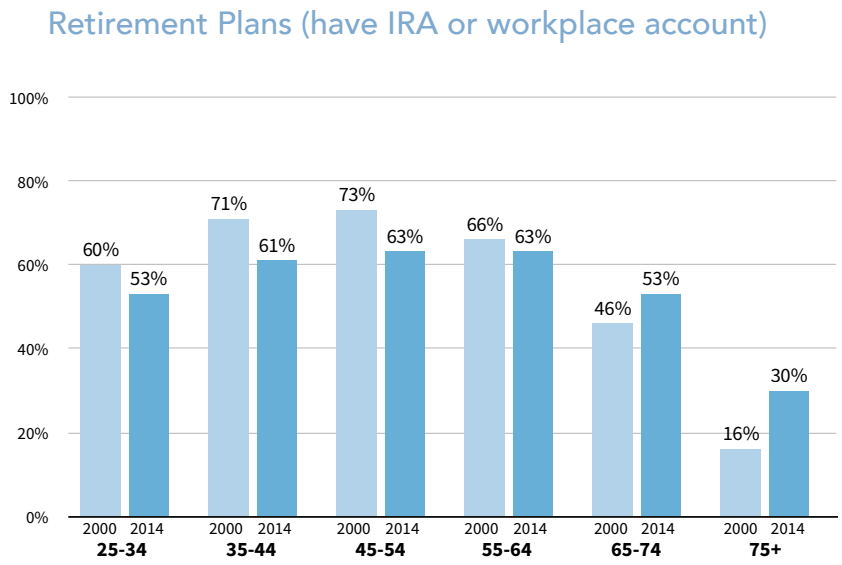
Building assets: Taking a long view

Building assets for the future through investments is generally a desirable contributor to financial security. The percentage of the U.S. population that is investing is shrinking.

Lower participation in investments and retirement plans

Fewer Americans are now invested in financial growth opportunities like mutual funds, stocks, bonds, annuities and whole life insurance – mechanisms that are important in ensuring financial futures. Retirement accounts, with tax advantages and penalties for early withdrawal, have been critical tools for ensuring financial security and wellbeing for later life. Fewer Americans under the age of 55 had such plans in 2014 than in 2000.

Among those eligible for work-based retirement plans, 85 percent participate. Among those not eligible for plans at work, only 30 percent have plans.



Data Source: Survey of Consumer Finances (SCF)

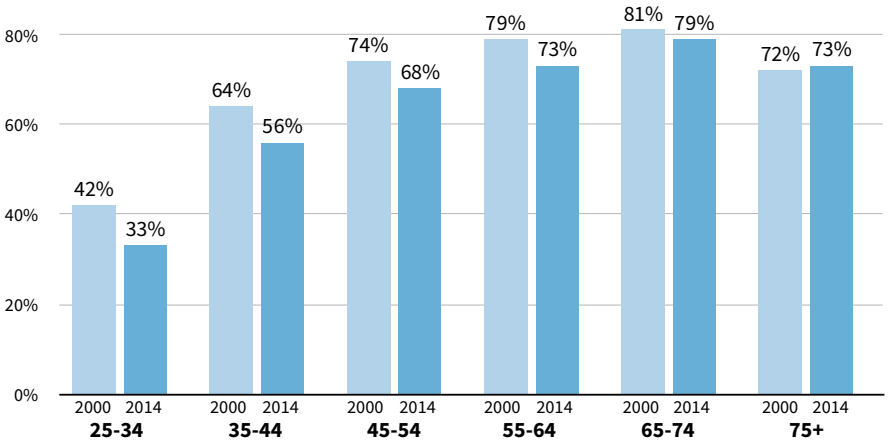
Just under half of Americans (47 percent) were eligible for work-based retirement plans in 2013. Employer-sponsored retirement and benefit programs have substantial advantages – expert design, group pricing leverage and powerful defaults. Among those eligible for work-based retirement plans, 85 percent participate. Among those not eligible for plans at work, only 30 percent have plans.

Moreover, the level of contribution in work-based plans is down. Even among those approaching traditional retirement age (ages 55 to 64) who were participating in work based plans, 58 percent were contributing 10 percent of their pay, compared to 69 percent in 2001.

Home ownership down

Home ownership rates are also down – from a peak of 67 percent in 2004 to 62 percent in 2014. Fewer than one in three of those aged 25 to 34 now live in their own homes, more than a 20 percent decline since 2000. Given that home ownership rates among those in this age group who are married have remained unchanged, it is likely that a delay in the age of marriage is at least a contributing factor. Regardless of the reasons, declines or even delays in home ownership imply reduced assets for post-retirement years.

Home Ownership



Data Source: Current Population Survey (CPS)

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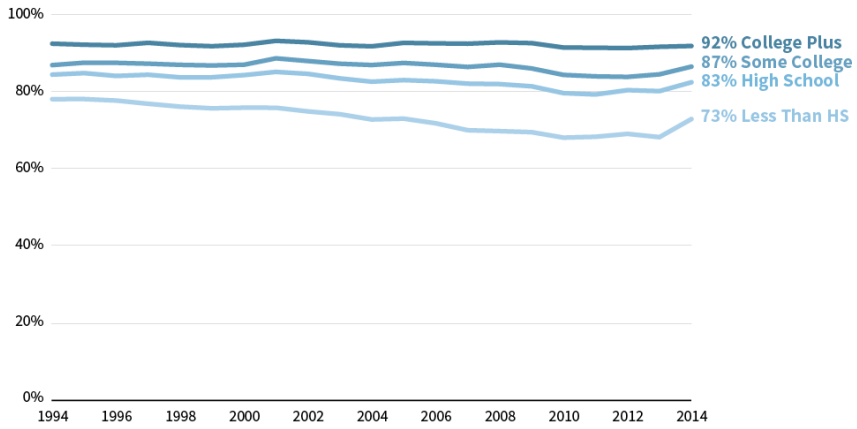
Protection: An insurance bright spot

A vast majority of educated Americans have had health insurance over the last 20 years. For those with less education, health insurance rates had been declining for almost 15 years. It is encouraging that following the passage of the Affordable Care Act in 2014, health insurance coverage is now on the rebound.

Health Insurance Coverage by Education Level



Data Source: Current Population Survey (CPS)

Long-term disability and long-term care

Fewer than one in three Americans under the age of 65 holds insurance to replace income in the event of long-term disability. Just one in 10 who did not graduate from high school was covered by long-term disability insurance in 2013, compared to 40 percent of college graduates.

Long-term care insurance is an option for older Americans who anticipate and can afford to allocate resources to pay for needed assistance with daily living activities not covered by Medicare or insurance. In 2014, less than 10 percent of Americans over 55 had long-term care insurance, although about one in three had sufficient assets to be considered self-insuring. Again, college graduates are in a better position here: half of those with college degrees could be expected to cover such a situation, compared to fewer than one in five of those without a high school diploma.

Working Longer, Retiring Later

As we live longer, we may choose to work longer for financial reasons, social ties and/or the sheer satisfaction in the work we do. If we are lucky, we can choose to continue working "full" time or elect to work a reduced schedule. From 2000 to 2012, the percentage of the population beyond 65 electing to continue working at least part time has increased. In 2012, 29% of 65-69 year olds, and 17% of 70-74 year olds (up 26% and 42% respectively) were still working for pay. Given that these increases are almost entirely among the more educated, it is likely that social and/or satisfaction elements were at least part of these decisions.

There is also a decision about when to begin taking Social Security. Taking Social Security at 62 results in a reduction of as much as 30% in one's annual benefits – for life. Starting after "normal" retirement age, on the other hand (now 66), results in increased benefits, 8% per additional year between the ages of 66 and 70.

In 2012, 65% of 65 year olds had filed for Social Security - 35% had not, compared to only 20% in 2000, a 59% increase in delayed filing. Among 66-year-olds, 26% had not yet filed, double the percentage of this age group that hadn't filed just 12 years earlier.

As we live longer, extending our years working is one way to reconfigure our financial, social and sense of purpose timelines.

FINANCIAL SECURITY SUMMARY

Compared with 15 years ago, fewer Americans are financially secure and fewer are taking the necessary steps to enhance their long-term financial security, spawning dramatic individual and societal implications. The youngest adults are faring the worst: with notable increases in pervasiveness and scale of student debt, there are accompanying delays in wealth-building activities. In addition, fewer Americans have access to employer-sponsored retirement and benefits programs today than they did 15 years ago; the least educated have become more vulnerable, and are more likely to live at or near poverty levels. Systemic economic influences contribute to ill-preparedness, so too individual preparations. By understanding, accepting and embracing the financial impact of living longer, policy makers, innovators and individuals have the opportunity to plan for healthy lives approaching 100 years and longer.

Conversation Starters

• **Address student debt.** Evidence in THE SIGHTLINES PROJECT and elsewhere shows that net benefits of education are striking and robust. Still, college costs have increased and public support has declined. What can we learn from programs currently in place? Some ideas are:

- Examine college-specific, private, federal, state and local programs to reduce initial student debt and pay it off more efficiently;

- Implement employer matching contributions similar to those offered to participants in retirement plans for employees repaying student loans, thus speeding debt retirement and the onset of wealth-building activities

- **Broaden post-secondary education.** Can we provide more types of post-secondary educational offerings that benefit a broader range of occupational aspirations and needs?

- **Expand access to investment plans and programs.** Employer-sponsored retirement and benefit programs have substantial advantages – expert design, group pricing leverage and powerful defaults. Can private and government providers of such plans and products identify ways to more effectively engage individuals who are not currently covered, including part-time employees, contractors, and under- or unemployed?

- **Explore strategies vis-à-vis short-term consumption vs. long-term stability.** For the majority of the population who have some discretionary income, how can we encourage a different balance between short-term consumption and long-term investment? Programs and products that build in structural nudges, such as "Save More Tomorrow," and other effective programs point to ways to encourage more widespread investing in the future.

HEALTHY LIVING

THE FUNDAMENTALS

Maintaining health and delaying the onset of chronic disease represent the most promising paths to continued longevity gains and quality of life improvements. Adopting a healthy lifestyle is key to accomplishing health goals. Those who make lifestyle improvements or make healthy choices can on average expect:

- longer lives;[13]
- lower incidence of serious chronic diseases such as cancer, heart disease, diabetes;[14] [15]
- better mental health.[16]

Daily activities vs. avoiding risky behaviors

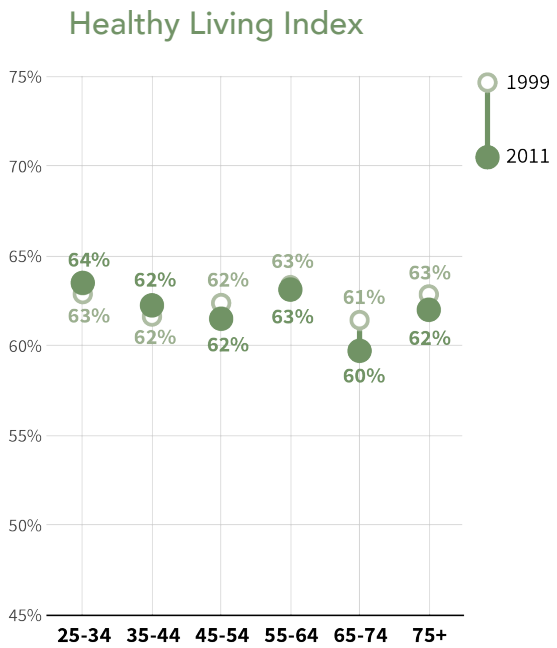
Two types of lifestyle choices are fundamental to longevity and wellbeing: healthy daily activities and avoidance of risky behaviors. The case for monitoring risky behaviors has been made all the more urgent by recent findings of rising mortality rates and a notable rise in drug and alcohol poisoning, suicide, chronic liver disease and cirrhosis among 30- to 64-year-old white, non-Hispanic Americans.[17] [18] A *New York Times* opinion piece puts the findings in stark terms: "White Americans are, in increasing numbers, killing themselves, directly or indirectly."[19]

When it comes to healthy daily behaviors, most Americans are aware of the benefits of eating well, exercising, maintaining healthy body mass, and getting enough sleep. But scientists such as Olshansky and his colleagues make it clear just how critical these issues will be to living long and well. They predict that the rapid rise in obesity rates may cause a "pulse event of mortality in the United States — akin to the large number of deaths caused by an influenza pandemic or a war, but spread out over the next four or five decades."[20] Most chronic diseases are at least partially attributed to diet. [21]

AN OVERVIEW

There are few consistent differences across the age groups and a mix of positive as well as negative trends in healthy living. When averaged, the impression created is one of relative stability over a 12-year period.

As might be expected, risky behaviors are less common in older age groups. Older individuals are less likely to smoke, binge drink and use illegal drugs. Daily activities such as exercise and diet do not vary by age and are lower than might be expected given the level of awareness of their benefits. Fewer than half of Americans are getting sufficient exercise, eating fruits and vegetables, etc.



Included in the Index:
Healthy Daily Activities

- *Regular exercise*
- *Limited sedentary behavior*
- *Healthy diet*
- *Healthy BMI*
- *Sufficient sleep*

Avoiding Risky Behaviors

- *Illicit drug use (for those under 65)*
- *Tobacco and nicotine use*
- *Excessive alcohol consumption*

THE SPECIFICS

Risky behaviors in flux

Although a majority of Americans avoid risky behaviors –- smoking, binge drinking and drug abuse –- these behaviors pose dramatic risks for the length and quality of life for the individuals who engage in them.

Rise in illegal drug use

Illegal drugs are generally seen as having devastating consequences for individuals and the nation over the past 40 years. Today illegal drug use is estimated to be responsible for over 17,000 deaths each year.[22] The National Institutes of Health recently estimated the societal cost of illicit drug use at $193 billion per year.[23] Although nine out of 10 Americans say they do not use illegal drugs, there is increased concern in recent years. In keeping with other recent findings,[24] rates of admitted illegal drug use have skyrocketed –- almost tripling from four percent in 2005 to 11 percent in 2011 among 55- to 64-year-olds. Although still not at the levels of drug use among young adults, a rise of this magnitude among this group is cause for concern.

Smoking remains a concern

Smoking is the number one cause of preventable disease and death in the United States, responsible for one in every five deaths.[25] Comparing smoking rates in 2011 relative to 1999, we can take solace in lower rates for Americans across the age spectrum. The largest decline is among the group with the highest rates, those aged 25 to 34. Just under 30 percent of Millennials aged 25 to 34 smoked in 2011, a decline of almost 20 percent relative to their predecessor cohort in 1999. Yet, lest we become complacent, even with that trajectory of decline, we can expect smoking to continue to be a health risk into the future. And, it is unclear how electronic, or e-cigarettes, will affect this trend. Moreover, African-Americans and those with less education and lower incomes have disproportionally higher smoking rates, which may be related to higher risks of chronic, debilitating and life threatening diseases. These are the very groups least likely to have health insurance or be able to pay for disability and/ or other treatments.

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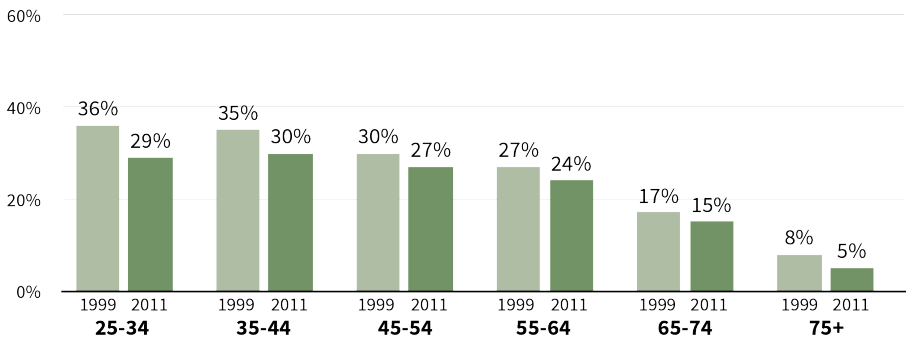
Smoking



Data source: National Health and Nutrition Examination Survey (NHANES)

Binge drinking continues

While there is some evidence that moderate alcohol consumption may provide health benefits, "binge drinking" is clearly detrimental to health[26] and linked to premature death and reduced quality of life. Each year in the U.S., an estimated 88,000 alcohol-related deaths occur, making alcohol abuse the third most preventable cause of death nationally.[27]

Fewer than 10 percent of Americans report binge drinking, a rate that has not changed in the past 12 years. Rates are higher in the youngest age group and the least educated and lowest income groups.

Daily activities: Diet, activity, sleep

As health problems shift from acute to chronic in nature, maintaining wellbeing throughout life depends more on chronic disease prevention, with diets and lifestyles emerging as the most promising avenues for intervention. A thorough study of the links between chronic disease and behavioral practices has shown "overwhelming evidence linking most chronic diseases seen in the world today to physical inactivity and diet."[28]

Diet guidelines are not being met

Tracking positive eating is difficult, in part because diet guidelines continue to evolve. One relative constant in dietary recommendations is the value placed on regular consumption of fruits and vegetables. Fruit and vegetable consumption captures elements of both nutritional value (fruits and vegetables are high in nutrients) and consumption of non-processed foods (raw fruits/vegetables are a major non-processed component of diet). The percentage of Americans eating the recommended minimum number of servings of fruits and vegetables per day (five or more) hovers around 25 percent for Americans of all ages and has not changed appreciably over the most recent decade of tracking. College-educated individuals more than their less educated peers, and women more than men, are more likely to meet this guideline.

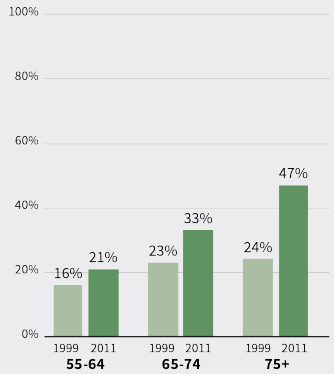
More exercise, but more sedentary behavior too

Two key aspects of physical activity are central to wellbeing and longevity: regular exercise and avoiding excessive sedentary behavior. Historically, our nation's focus has been on the importance of regular moderate and vigorous exercise. The risks of sedentary behavior have surfaced relatively recently.[29] Popular media have reported such research findings and captured public attention with claims such as, "sitting is the new smoking."[30] In the extreme, studies of extended inactivity found that "three weeks of bed rest in otherwise healthy men had a more profound impact on physical work capacity than did three decades of aging in the same men."[31]

Polypharmacy on the Rise

More Americans, especially older Americans, are taking multiple prescription medications. This may well be inevitable given the increase in chronic conditions, especially those that are effectively managed through medication. On the other hand, research indicates that when five or more prescriptions are used simultaneously, there are increased risks of health complications such as confusion, dizziness, and falls as well as unanticipated drug interactions.[32] With almost one in two of those 75 or older now taking five or more medications, almost twice the percentage of just 12 years earlier, these risks may well be increasing.

Taking more than 5 Prescription Medications

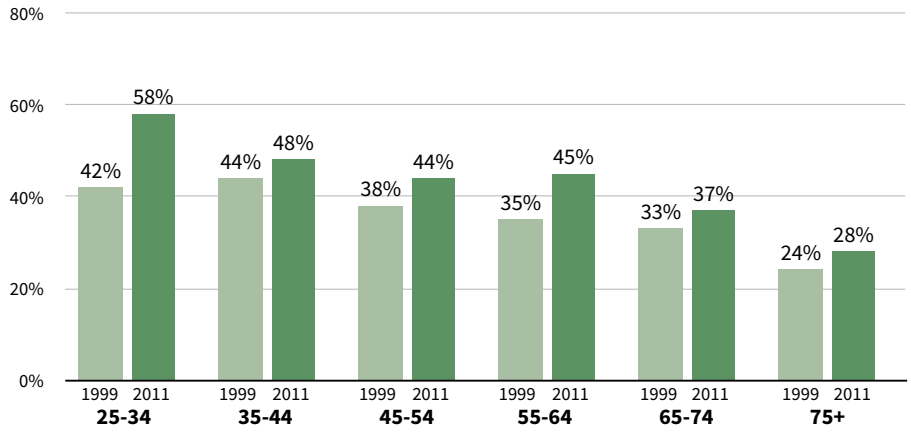


Data Source: National Health and Nutrition Examination Study (NHANES)

It should be noted that this trend began well before the implementation of Medicare Part D coverage and is therefore unlikely to be an outcome of coverage. This spike in "polypharmacy" warrants further research and management of risks versus benefits.

The news on exercise is very encouraging. The percentage of those meeting or exceeding the recommended weekly "dose" of exercise (≥ 150 minutes per week of moderate to vigorous exercise) is on the rise at every age. The increase among Millennials is especially noteworthy with 58 percent meeting guidelines in 2011. The least educated, those with the lowest incomes, as well as African-Americans and Hispanics, have reported lower levels of exercise in the past, but were nearly on par with the more educated, affluent and white counterparts in 2011.

Moderate Exercise (3+ times/week)



Data source: National Health and Nutrition Examination Survey (NHANES)

Across the same time period, however, Americans are sitting for longer stretches. Indeed, a majority across age groups are sedentary for a total of five or more hours per day. The trends are most dramatic for the youngest age group. Also, sedentary time is greatest among whites, the most educated, and the highest income groups.

Sedentary (5+ hrs/day)

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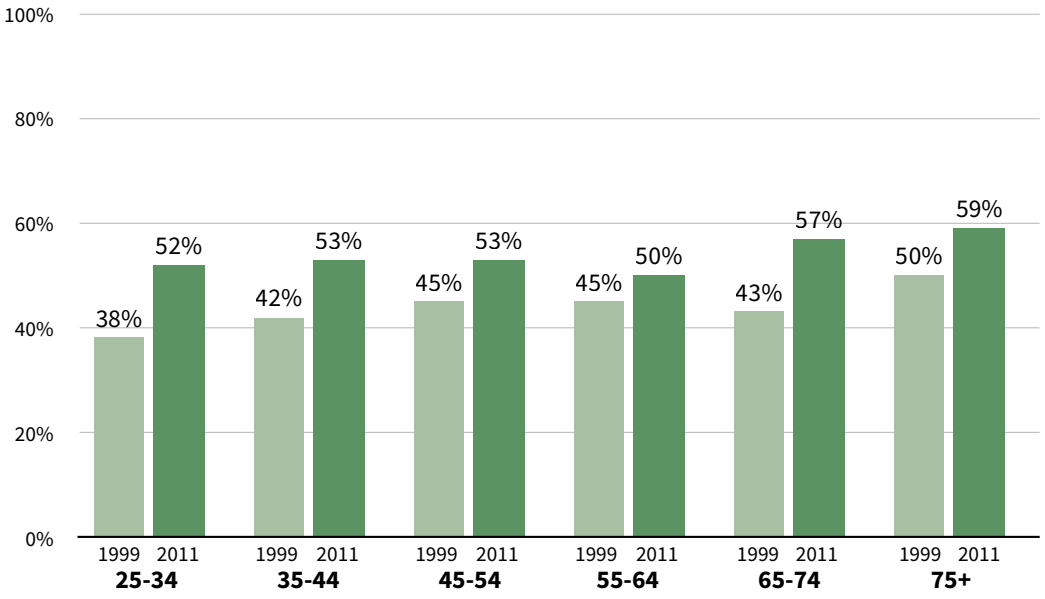
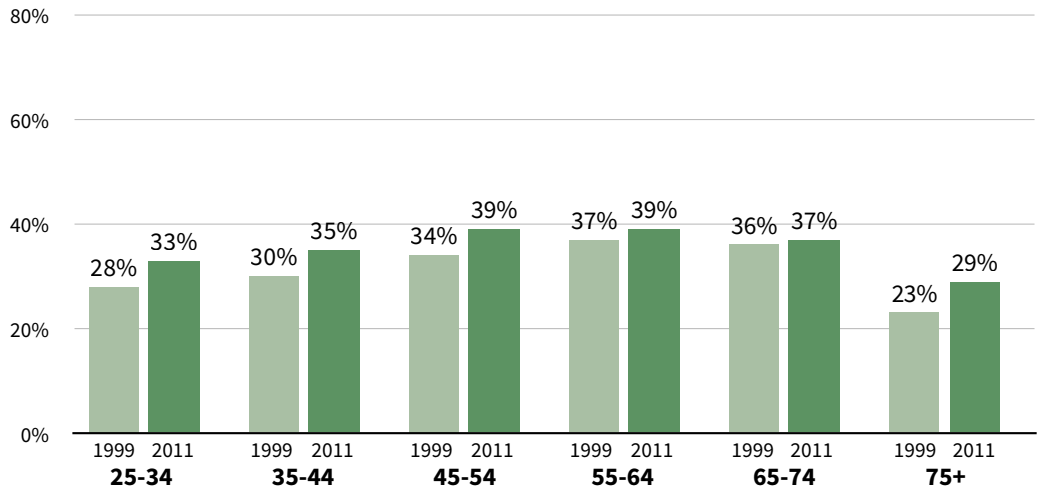


Data source: National Health and Nutrition Examination Survey (NHANES)

Obesity rates continue to inch upward

Obesity, measured by Body Mass Index of greater than 30, is a significant risk factor for many serious diseases and health conditions, including hypertension, Type 2 diabetes, heart disease, stroke, osteoarthritis, some cancers and chronic pain.[33] One might hope that increased exercise might reduce or at least slow the rise in obesity. Yet, obesity continued to inch upward from 1999 to 2011. More than one in three Americans under the age of 75 is obese. Obesity rates among those aged 25 to 54 and those 75 and older are substantially higher than they were just 12 years ago. The increase in obesity is especially troubling among African-Americans, where one in every two individuals is now obese.

Obese (30+ BMI)



Data source: National Health and Nutrition Examination Survey (NHANES)

More than one in three Americans under the age of 75 is obese.

Four in 10 Americans do not get the recommended seven hours of sleep per night.

Sleep deprivation for many

Sleep is known to play an integral role in physical health, affecting cellular repair of tissues such as the heart and blood vessels. Too little sleep is associated with chronic disease and mortality risk.[34] A recent consensus statement from the American Academy of Sleep Medicine and the Sleep Research Society set seven hours as the daily minimum for adults' optimal health.[35]

Four in 10 Americans do not get the recommended seven hours of sleep per night. There are no substantial differences by age or changes from 2005 to 2011. College graduates report getting more sleep than their less educated peers. The patterns also differ by income, race and ethnicity. Only 46 percent of African-Americans report getting seven or more hours per night versus 64 percent of whites.

HEALTHY LIVING SUMMARY

The past two decades have witnessed encouraging progress in the area of healthy living: More than 80 percent of Americans recognize that diet and exercise are important to living long, healthy lives.[36] For the first time in decades, almost one in two Americans under 65 is exercising regularly. Yet obesity continues to rise in the population and pervasive and unchanging problems associated with diet, sleep, and sedentary behavior may be undermining long-term health.

Conversation Starters

- **Expand national 'exercise' guidelines to include sleep and sitting.** Expanding current guidelines about exercise to include a 24-hour activity cycle could be a first step in focusing public attention on sitting and sleeping along with exercise. Guidance about how individuals should spend their days to optimize long-term health for health professionals and the public could become a springboard for a host of private and public sector activities.

- **Foot in the door.** We have long understood that small "asks" can effectively open the door to more substantial behavioral changes. A small consistent ask of Americans – less sitting and more light physical activities – may be an effective way to increase healthy behavior.

- **Employer initiatives.** Employers could make substantial contributions to the health of their employees, their families and local communities by creating healthy workplaces. Organizational norms that encourage walking versus sitting during meetings could be a start. Making nutrient-rich foods available in employee cafeterias and in the communities in which their employees reside are possible avenues.

- **Accessibility of foodstuffs.** Accessibility of fresh vegetables and fruits are a function of availability and cost. Improving accessibility, especially near vegetable-poor urban areas, may improve public health and longevity.

- **Feedback platforms.** Wearables are emerging as a powerful means to monitor and nudge individuals to engage in healthy behaviors. Increasing affordability and ease of use could play a role in achieving individual and collective healthy behavior across the age and education spectrums of Americans.

SOCIAL ENGAGEMENT

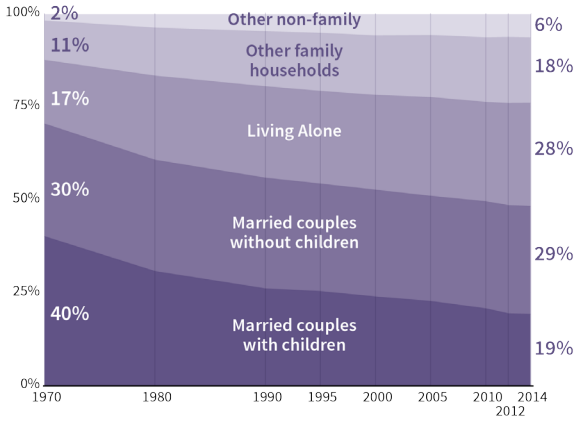
THE FUNDAMENTALS

Research demonstrates that social engagement confers significant benefits, including:

- physical health and resistance to illness and disease, from common colds to heart disease;[37 38 39 40]
- mental and cognitive health, sense of purpose and control;[41 42 43]
- longevity.[44 45]

By contrast, socially isolated individuals face health risks comparable to those of smokers. Their mortality risk is twice that of obese individuals.

The Changing American Household



Data source: U.S. Census Bureau, August 2013, January 2015

Over the past 50 years, Americans' living patterns have changed dramatically. In 1970, a married couple with young children represented the most common living arrangement. Forty percent of households reflected this "traditional" family constellation. By 2014, fewer than 20 percent of households comprised a traditional mix – a married couple with children. Fifty-eight percent of households were occupied by a single adult, or a married couple without children.

AN OVERVIEW

To assess recent changes in the social engagement of Americans, we initially compared a summary index of nine key indicators of two types of activities critical to engagement: meaningful relationships and group involvement. Both have been linked to wellbeing and long life. The overall index which spans these activities indicates the average percentage of Americans who are socially engaged. Comparing these metrics over time within age groups enables us to see the trajectories at each decade of life, and to assess whether these groups are headed in positive or negative directions.

Social Engagement Index

This index shows social engagement levels for all age groups have not changed substantially, with one exception: today's 55- to 64-year-olds are less likely to be socially engaged than their predecessors. This age group, part of the Baby Boom generation, are less likely to have meaningful interactions with a spouse or partner. They have weaker ties to family, friends and neighbors, and are less likely to engage in church and other community activities than those who were the same age 20 years ago.

Included in the index:

Meaningful Relationships

- *Interactions with family*
- *Support from family*
- *Interactions with friends*
- *Support from friends*
- *Meaningful interactions with spouse/partner*

Group Involvement

- *Neighbor contact*
- *Volunteering*
- *Participation in religious and community organizations*
- *Working for pay*

THE SPECIFICS

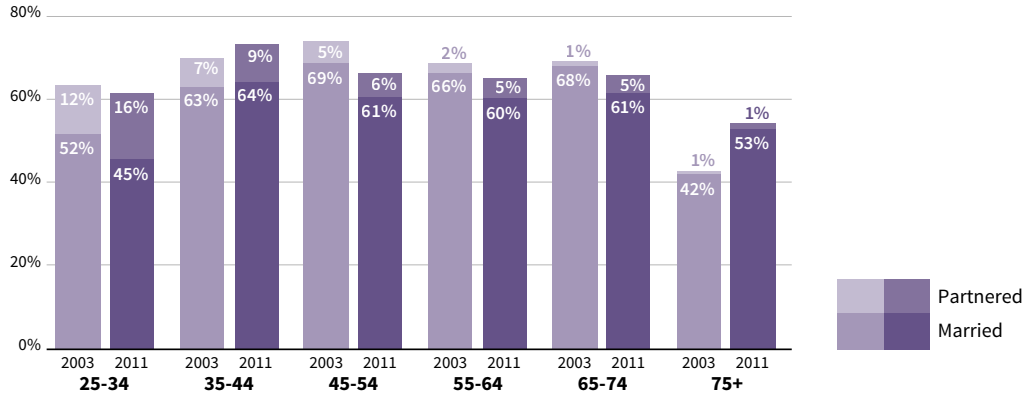
Meaningful Relationships

Partnerships on the rise

Historically, marriage has produced significant benefits for life expectancy and wellbeing. This bodes well for those 75+, who in 2011 were more likely to remain married than their predecessors, likely due to increases in life expectancy. The signs are not as positive for the 55- to 64 year-old group – the only age cohort to experience a marked decline in married people (7 percent between 1999 and 2011).

Millennials, those aged 25 to 34, are less likely to be married than in 1999, and more likely to be living with a partner. It is unclear whether partnerships convey the same benefits to health and wellbeing that marriage does. This trend bears further study. African-Americans are least likely to be married or living with a partner (44 percent, compared with 67 percent of whites.)

Married/Partnered



Among married and partnered individuals, close to 70 percent indicated that they share important conversations at least once per week.

Data source: National Health and Nutrition Examination Survey (NHANES)

The measurable benefits of marriage for men are well-documented. For women, some reports suggest that benefits of marriage are less consistent and depend on the quality of the relationship, [46] while other research finds marriage beneficial for both women and men.[47] Researchers measured quality by the frequency of meaningful and/or important conversations reported in a week, with one or more such conversations each week as a proxy for a positive relationship. Among married and partnered individuals, close to 70 percent indicated that they share important conversations at least once per week; there was little variation by age, although Baby Boomers aged 55 to 64 in 2011 were less likely than 55- to 64-year-olds in 2003 to report this type of positive interaction.

Interactions with family and friends

Seven in 10 Americans interact multiple times a week with family members outside their household – a constant over the last 20 years for all but one age cohort. The 55- to 64-year-old age group is now the least likely to interact with family who do not live with them. This departure represents a substantive change from 1995, when this age group was more connected to families than other age cohorts.

There are substantial demographic differences in the level of family engagement. Hispanics are most likely to interact with family members outside their household – 77 percent reported regular interaction with family compared to 67 percent of whites. Women are also more likely than men to engage with family.

There when we need them – Family support

The sense that family members will be available in times of need is another key metric of strong engagement. These results directly parallel those for frequency of interaction: Seven in 10 Americans believe they could turn to family for help in an emergency. But again the 55- to 64-year-old age group is quite different from its predecessors. From 1995 to 2012, the percentage of 55- to 64-year-olds saying they could count on a family member in time of need dropped from 79 percent to 69 percent.

Of those 65 to 74, nearly eight in 10 expect a family member to be there for them. Differences across gender, race/ethnicity, and educational level are substantial. Among those without a high school diploma, 55 percent report that a family member will help them, compared with 73 percent of those who pursued higher education.

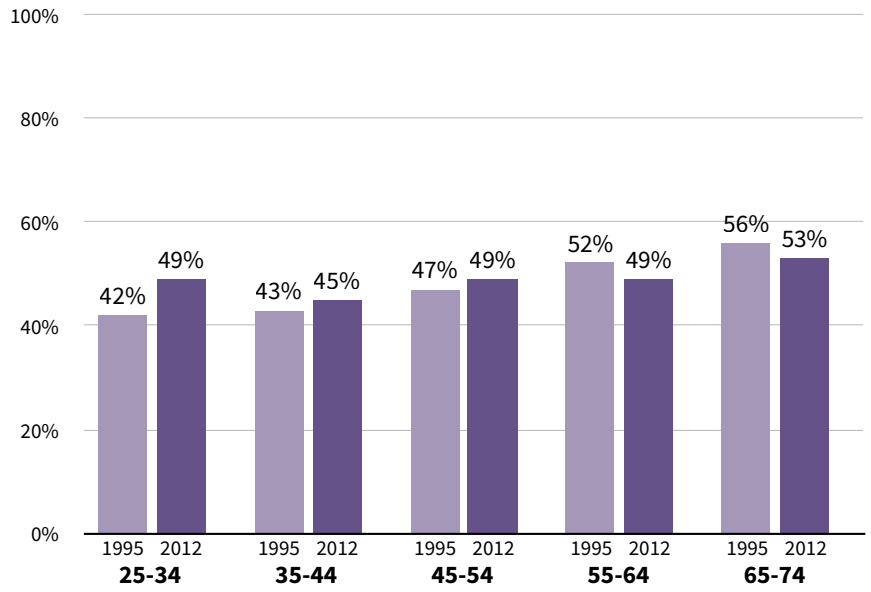
From 1995 to 2012, the percentage of 55- to 64 year-olds saying they could count on a family member in time of need dropped from 79 percent to 69 percent.

Interacting with friends does not imply expectations of support

Sixty percent of Americans interact regularly with their friends in person, via phone or by email. The 55- to 64-year-old age group in 2012 were less likely to interact with friends, compared with people the same age in 1995. Hispanics, more involved with family members, were less likely to interact with friends than other groups. Even those who interact frequently do not always feel they can turn to friends for support. Generally, about half of Americans feel that a friend would help in a time of need. The proportion of 25- to 34-year-olds who expect a friend to be there in times of need has increased, perhaps not surprising given the growing proportion of singles in this age group.

Generally, about half of Americans feel that a friend would help in a time of need.

Social Support from friends



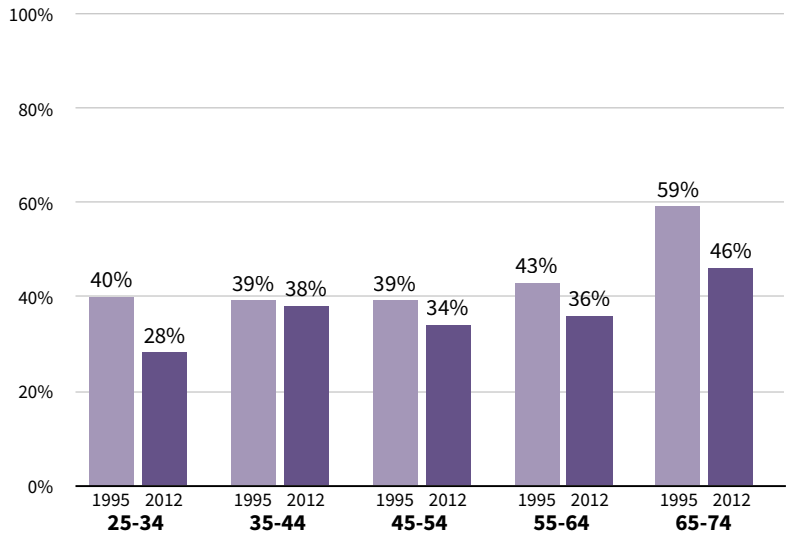
Data source: Midlife in the United States (MIDUS)

Group Involvement

Less interaction with neighbors

Relationships with neighbors are considered an important indicator of social integration and a meaningful part of traditional community engagement. Only one in three Americans interacts with neighbors weekly. Among 25- to 34-year-olds, only one in four talks to a neighbor, down 30 percent in just 17 years. Even among those 65 to 74, fewer than one in two talks to a neighbor once a week. The likelihood of interacting with neighbors on a regular basis varies by race and education. African-Americans are most likely to interact with neighbors regularly but even in this group, fewer than half do so weekly.

Conversation with neighbor (1+week)



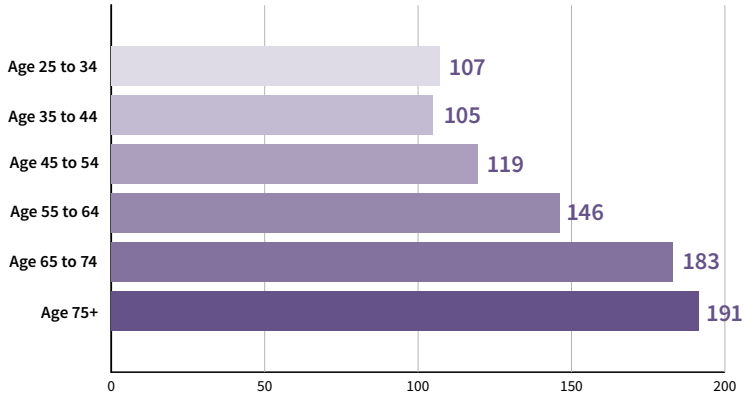
Data source: Midlife in the United States (MIDUS)

Only one in three Americans interacts with neighbors weekly.

Volunteerism limited

Volunteerism can be a powerful way to engage with others and heighten one's sense of purpose, valuable to wellbeing.[48] The proportion of American adults involved in volunteerism has remained at just over one in four. Volunteerism is more common among women, those with more education and those aged 35 to 44 who are most likely to have children at home. Even though volunteerism rates are consistent across age groups, the average number of hours volunteered increases with age. Those 65 and older generally devote substantially more time to volunteering than their younger peers.

Average hours per volunteer (2013)

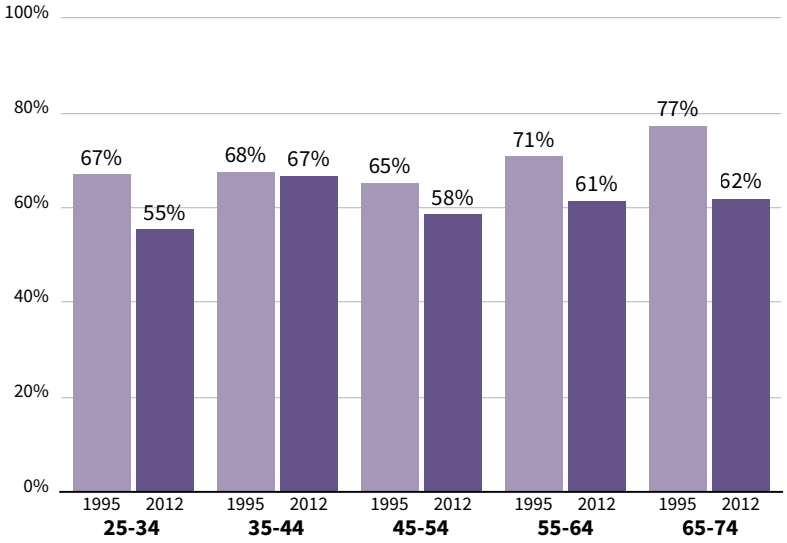


Data source: Midlife in the United States (MIDUS)

Community involvement and religious attendance

People who are involved in their communities and/or engaged in religious activities enjoy better health and lower mortality.[49] [50] The trend in such involvement has been on the decline in recent years: 61 percent of Americans are involved in these activities once a month in recent years compared to 69 percent in 1995. The reduction is steepest for those aged 65 to 74: Fewer than two out of three are so involved versus more than three out of four in 1995. Community involvement is higher among those who are married and those with the highest incomes and educational levels. African-Americans are most likely to report community and/or involvement in religious activities – 77 percent in 2012 – still a substantial decline from the 85 percent in 1995.

Engaged in community and religious activities



Data source: Midlife in the United States (MIDUS)

Social engagement through work

Work provides an environment in which to cultivate relationships with others and facilitate a sense of meaning and purpose, both of which are important aspects of social engagement.[51] In 2014, a larger percentage of older adults (those 55+) were working than in 1995. The gender gap in participation in paid work has declined slightly over the last two decades. The proportion of women of all ages (25+) who work for pay has remained steady at 55 percent while the percentage of working men has dipped. The highly educated are most likely to work. In 2014, 73 percent of college graduates were working, compared to 41 percent of those with a high school diploma.

WHAT ABOUT THOSE 65 AND OLDER?

We generally focused our basic analysis of social engagement trends on Americans aged 25 to 74 because they are well represented in basic population studies. To look in depth at social engagement among older Americans, we turned to the Health and Retirement Study (HRS), which provides additional data on this topic and provides more information on those 75 or older. Here are a few findings of interest.

• 83 percent of this group say they have a family or friend available to help when needed even though more than one-third of those 75 or older do not interact with friends or family on a weekly basis.

• Continuous learning is often thought of as aspirational rather than characteristic of our era. Yet, among those over 65, almost one in four attend a lecture, concert or other cultural activity once a month. Women more than men, and those with higher education levels were most likely to attend.

• Most older adults (80 percent of those 65 to 74 and 72 percent of those over 75) experience physical affection on a weekly basis. Research indicates that physical affection at any age is a positive: Touch is a crucial part of human development and wellbeing, and greatly contributes to the sense of being connected to others.

SOCIAL ENGAGEMENT SUMMARY

Many traditional modes of social engagement in the nation are low and waning: Young and even older Americans are not as likely to visit with neighbors or participate in community or religious organizations, which were sources of considerable support in earlier times. Although one in five Americans report that they do not have friends or family who they can rely on for help, a majority of Americans continue to feel good about their relationships. The apparent discrepancy may be at least in part a shift in modality of contact – from face-to-face and phone to chat, posting, tweeting, video telephony, etc. – than a change in degree.

Regardless of sea changes in modality of social engagement, there are likely opportunities to enhance proximate relationships and thereby increase the benefits of social engagement. Especially for Baby Boomers, for whom social ties appear to be weakening, these efforts could enhance longevity and wellbeing for this generation.

Conversation Starters

- **Expand employer wellness programs.** Such programs can supplement physical fitness efforts with guidelines or resources to strengthen support networks throughout life, particularly during transitional times such as empty-nesting, divorce and/or retirement.

- **Environmental design.** A key to a renewal of neighborhood and community life can be thoughtful urban design and architecture that supports valued social interaction. There are opportunities here for innovative policies and public/private collaborations that restructure schools, workplaces and communities to heighten social integration.

- **Supporting personal relationships.** Technologies like video telephony could help overcome barriers of time and space to maintain important relationships as individuals change locations or as a parent or spouse travels for work. Shared calendars can more easily align schedules and create "nudges" that encourage valued interactions on a regular basis. Innovative apps, such as "Next Door," can strengthen ties among neighbors.

- **Encourage volunteerism.** Research consistently indicates that volunteering confers mental and physical benefits to volunteers, but participation remains low. Companies and organizations can provide information and access to individuals interested in meaningful volunteering, particularly to the 55- to 64-year-old cohort, as research shows pre-retirement is a "sweet spot" to target volunteer recruitment efforts.

- **Examine social media.** Research is needed to assess the value of new, low-bandwidth, high-frequency social engagements via chat, texting, posting, etc. Understanding the benefits (and potential drawbacks) of these new forms of engagement is important in an increasingly technology-mediated social world.

LOOKING AHEAD

THE SIGHTLINES PROJECT highlights specific metrics that can be used to monitor and ultimately enhance longevity and wellbeing in 21st century America. Compared with 15 years ago, there are reasons for both optimism and concern with regard to the way Americans are approaching the prospect of living longer lives. Understanding and addressing the challenges to healthy behavior, financial security, and social engagement, policy makers, innovators, and individuals can improve individual and national wellbeing. Innovative and pragmatic approaches are essential to changing the trajectory. Stanford's Center on Longevity looks forward to engaging the American public, employers, industry leaders, and policy makers in essential discussions aimed at finding solutions to problems and ultimately building a culture that supports long life.

The source data provided by the eight nationally recognized research programs on which our analyses rest are extraordinary in their breadth, depth and quality. Yet there is room for continuous improvement. Sample sizes are adequate for many types of analyses, but do not always support the ability to look at important racial and ethnic divisions across the life course. Delays in the availability of information, access to data, and evolution of good analytical metrics create challenges for researchers in highlighting emerging trends in a timely fashion. Going forward, we look to foster mechanisms for the public to have direct and flexible access to the data to enable deeper dives on topics beyond those in this report.

Proposals for more proactive approaches to financial security, more pervasive healthy living and/or stronger social engagement need to be identified, debated, tested and iterated to make real and more pervasive progress in achieving the 21st century miracle of century lives for more Americans.

METHODOLOGY

ANALYTICAL APPROACH

The Stanford Center Longevity sponsored an interdisciplinary consensus conference of national experts in January, 2014, to launch THE SIGHTLINES PROJECT. The group identified an extensive list of empirically-validated predictors of longevity and wellbeing, and categorized them by domain. A project team headed by SCL division heads sought out sources of data on each of these topics in nationally representative, high-quality, large-scale data sets which consistently measured the concepts and metrics of interest over the past two decades. Where desirable thresholds were available, analysis compared the percentage of Americans who met the threshold for the most recent year available (typically 2014 or 2013) as well as prior years as long ago as 1995. The key was to compare not just overall trends, but how each age cohort (e.g. 25- to 34-year-olds) scored relative to the same cohort in prior years. Especially where differences emerged, we were able to better understand those differences by looking at subgroups in each time period. For example, to understand changes in home ownership between now and then, we looked at home ownership within each age group who were married versus those that were not.

We honed in on differences between groups OR over time of five percent or more. Given the size of the data sets, and therefore the size of groups being compared, this cut-off reduced the likelihood that differences would be attributable to sampling error. Initial results and successive iterations were shared and reviewed with experts. Alignment with prior research was investigated.

Obviously, the three selected domains and the specific behaviors and conditions discussed in this report do not cover all possible contributors to long life and wellbeing. Specifically, we focused on behaviors that are:

- supported by compelling scientific evidence of improved longevity and wellbeing;
- tracked by existing, authoritative, nationally representative studies of Americans across the age spectrum at multiple points in time over the last 20 years;
- malleable - that is, that individuals and/or society are able to affect.

We were limited by existing measures and samples. Despite the importance of technology-based social engagement, for example, many did not exist 15 to 20 years ago and are not represented in large scale studies. Others were not covered in this report because they have mixed or unknown impact on key areas (e.g. social engagement, financial security) and ultimately wellbeing and longevity. Annual check-ups, for example, are not included in this report because research has failed to support reliable positive impacts on long-term wellbeing.

Regrettably, considerations of race/ethnicity, gender, education and age interactions were often limited by small sample sizes. Further drill downs into specific sub populations will be pursued as we move forward.

DATA

Data were drawn from nationally representative, high-quality, large-scale, multi-year studies.

Domain	Data source	Provider	Sample Size	Frequency
Social	Current Population Survey, Annual Social and Economic Supplement (CPS-ASEC)	U.S. Bureau of Labor Statistics & U.S. Census Bureau	56,000	Annual
	Current Population Survey Volunteer Supplement (CPSVS)	U.S. Bureau of Labor Statistics & U.S. Census Bureau	56,000	Annual
	Health and Retirement Study (HRS)	University of Michigan & National Institute on Aging	20,000	Bi-annual
	Midlife in the United States (MIDUS)	University of Wisconsin & National Institute on Aging	1800-3000	1994, 2004, 2012
	Continuous National Health and Nutrition Examination Survey (NHANES)	Centers for Disease Control	6,000	Bi-annual
Financial	Consumer Expenditure Survey (CEX)	U.S. Bureau of Labor Statistics & U.S. Census Bureau	7,000	Annual
	Current Population Survey, Annual Social and Economic Supplement (CPS-ASEC)	U.S. Bureau of Labor Statistics & U.S. Census Bureau	56,000	Annual
	Survey of Consumer Finances (SCF)	Federal Reserve	65,000	Tri-annual
Physical	Behavioral Risk Factor Surveillance System (BRFSS)	Centers for Disease Control and Prevention	350,000	2005, 2007, 2009
	Continuous National Health and Nutrition Examination Survey (NHANES)	Centers for Disease Control and Prevention	6,000	Bi-annual

FINANCIAL SECURITY MEASURES

	Variable	Description	Data Set	Benchmark/ (Sample size)	Latest/ (Sample Size)
Cash flow	Threshhold Income	Percent of individuals in households where income is 200+% of the official "Federal Poverty Level", which is based on the size and composition of households. Thresholds for one- and two-person families headed by someone aged 65+ are lower than those headed by younger individuals.	CPS-ASEC	1994 (56,000)*	2014 (56,000)
	Manageable debt	Percent of individuals in households in which non-collateralized household debt <20% of household income.	SCF	1995 (4,500)*	2013 (4,500)*
	Emergency funds	Percent of individuals in households with access to $3,000 in emergency resources either by ability to borrow from family or friends, or bank account balance of $3,000 above average monthly income.	SCF	1995 (4,500)*	2013 (4,500)*
Asset Growth	Investments	Percent of individuals in households with annuities, bonds, brokerage accounts, IRAs, managed investment accounts, mutual funds, savings bonds, stocks, stock options, workplace-based retirement accounts, or whole life insurance plans.	SCF	1995 (4,500)*	2013 (4,500)*
	Retirement savings	Percent of individuals who live in households where household head or spouse has a workplace-based retirement plan or an IRA.	SCF	1995 (4,500)*	2013 (4,500)*
	Home Ownership	Percent of individuals in households in which home is owner-occupied and is considered either the head of household or the spouse/partner of the head of household.	CPS-ASEC	1994 (56,000)*	2014 (56,000)
Protection	Health Insurance	Percent of individuals with health insurance from any source, including employer/group, private, Medicare, Medicaid, veterans/military, etc.	CPS-ASEC	1994 (56,000)*	2014 (56,000)
	Long-term Disability/Long-term Care	Percent of individuals 25- 64 in households with long-term disability insurance or 65+ who have either long-term care insurance, or sufficient assets.	SCF & CEX	2007 (SCF 4,500)* (CEX 5,000)*	2013 (SCF 4,500)* (CEX 5,000)*
	Life Insurance	Percent of individuals in households with life insurance.	SCF	1995 (4,500)*	2013 (4,500)*

*Approximate – sample sizes vary by measure

HEALTHY LIVING MEASURES

	Variable	Description	Data Set	Benchmark/ (Sample size)	Latest/ (Sample Size)
Healthy Daily Activities	Exercise moderately	Individual engagement in moderate or vigorous physical activity for at least 150 minutes per week. Includes walking/ biking for transport, and leisure-time, school, or recreational physical activity but NOT include work-related physical activity.	NHANES	1999 (5,448)	2011 (5,864)
	Low sedentary time	Percent of individuals who spend 320 minutes per day or more sitting at work, at home, or at school, including sitting at a desk, sitting with friends, traveling in a car, bus, or train, reading, playing cards, watching television, or using a computer, but NOT sleeping.	NHANES	2007 (5,448)	2011 (4,990)
	Maintain healthy BMI	Percent of individuals with a body mass index between 18.5-29.99 (which includes both "normal" and "overweight" but not underweight or obese).	NHANES	1999 (3,965)	2011 (4,713)
	Eat 5 fruits and vegetables	An individual's responses to six questions about eating habits were combined to create a composite measure of average daily fruit and vegetable consumption of at least 5 total per day.	BRFSS	2005 (350,000)*	2009 (350,000)*
	Sufficient sleep	Individual responses to the question "How much sleep do you usually get at night on weekdays or workdays?" to capture those who answered any number between 7 and 9 hours.	NHANES	2005 (4,432)	2011 (5,004)
Avoid Risky Behaviors	Tobacco and Nicotine Use	Percent of individuals who avoided using any tobacco or nicotine products in the past 5 days, including cigarettes, pipes, cigars, chewing tobacco, snuff, nicotine patches, nicotine gum, or any other product containing nicotine.	NHANES	1999 (3,782)	2011 (4,224)
	Excessive alcohol consumption	Percent of individuals who avoid excess alcohol consumption, which includes men having less than 5 drinks less than 12 times per year, and women less than four drinks less than 12 times per year.	NHANES	1999 (5,448)	2011 (5,864)
	Illicit drug use	Percent of individuals who have avoided use of marijuana, cocaine (any form), heroin, and methamphetamine in the past 30 days.	NHANES	2005 (5,563)	2011 (5,864)

*Approximate – sample sizes vary by measure

SOCIAL ENGAGEMENT MEASURES

	Variable	Description	Data Set	Benchmark/ (Sample size)	Latest/ (Sample Size)
Meaningful Relationships	Meaningful interactions with spouse/partner	Percent of individuals who report having a "really good talk about something important" with spouse or partner at least once person week.	MIDUS	1995 (2,961)	2012 (2562)
	Frequent interactions with family	Percent of individuals in contact with any family members (brothers, sisters, parents, or children) who do not live with them, including visits, phone calls, letters, or email, several times per week.	MIDUS	1995 (2,940)	2012 (2,569)
	Social support from family	Percent of individuals who report they can rely "a lot" on family members (brothers, sisters, parents, or children) who do not live with them for help with a serious problem.	MIDUS	1995 (2,960)	2012 (2,508)
	Frequent interactions with friends	Percent of individuals who are in contact with any of their friends, including visits, phone calls, letters or email, at least several times per week.	MIDUS	1995 (2,960)	2012 (2,569)
	Social support from friends	Percent of individuals who report they can rely "a lot" on friends for help with a serious problem.	MIDUS	1995 (2,963)	2012 (2,563)
Group Involvement	Converse with neighbor	Percent of individuals who "have a real conversation or get together socially" with any of their neighbors at least once per week.	MIDUS	1995 (2,970)	2012 (2,567)
	Volunteer	Percent of individuals who have "done any volunteer activities through or for an organization" since September 1 of the previous year.	CPS-VS	2002 (82,260)	2013 (75,593)
	Workforce participation	Percent of individuals who are either employed or in the armed forces; all others are counted as not being employed, whether or not they are considered to be part of the workforce.	CPS-ASEC	1995 (56,000)*	2012 (56,000)*

*Approximate – sample sizes vary by measure

ACKNOWLEDGMENTS

THE SIGHTLINES PROJECT, initially undertaken in 2014, reflects a major collaborative effort to provide a data-driven analysis of the American population that reveals trends that predict long and healthy lives. THE SIGHTLINES PROJECT rests on the deep expertise of Stanford faculty and experts from other universities and industries around the nation. It builds on the work of researchers who have rigorously compiled evidence about representative samples of Americans for decades. Because of these efforts, we were able to mine evidence and assess changes in the American population.

SCL staff have worked tirelessly on the project since its inception. We are grateful to the core group of senior staff and consultants who created the report: Martha Deevy, Margaret Dyer-Chamberlain, Adele Hayutin, Nileeni Meegama, John Rother, Ken Smith, Steven Vernon and Amy Yotopoulos. It would not have been possible without the dedicated efforts of Rebecca Broome, Dawn Carr, Molly Corbett, Marti DeLiema, Zach Gassoumis, Dana Glei, Lauren Grieco, Deepika Jain, Dominika Jaworski, David Pagano, Andy Reed, and Jonathan Streeter. We are especially indebted to Ellen Konar for her heroic efforts and insights in the final months leading up to the present report.

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REFERENCES

1 Peter Hart Research Associates 2015 http://hartresearch.com/americans-long-life-expectations-clash-with-reality/

2 American Psychological Association, "Paying with Our Health," (2015).

3 David M. Cutler, Angus S. Deaton, and Adriana Lleras-Muney, "The Determinants of Mortality," *National Bureau of Economic Research, (2006).*

4 Kenneth F. Ferraro and Tetyana Pylypiv Shippee, "Aging and Cumulative Inequality: How Does Inequality Get under the Skin?," *The Gerontologist* 49, no. 3 (2009).

5 Peggy Schyns, "Wealth of Nations, Individual Income and Life Satisfaction in 42 Countries: A Multilevel Approach," *Social Indicators Research* 60, no. 1-3 (2002).

6 Daniel Kahneman and Angus Deaton, "High Income Improves Evaluation of Life but not Emotional Well-Being," *Proceedings of the National Academy of Sciences* 107, no. 38 (2010).

7 G.S. Becker, A Treatise on the Family (Cambridge: Harvard University Press 1981).

8 American Psychological Association, "Paying with Our Health," (2015).

9 Alicia H. Munnell and Matthew S. Rutledge, "The Effects of the Great Recession on the Retirement Security of Older Workers," *The Annals of the American Academy of Political and Social Science* 650, no. 1 (2013).

10 National Center for Health Statistics, National Vital Statistics Reports. www.cdc.gov/nchs

11 Monique Morrissey, "The Myth of Early Retirement," *Economic Policy Institute* (2011).

12 John Patrick Ford., "How to support a 30-year retirement." *San Diego Source* (2014).

13 Martin Loef and Harald Walach, "The Combined Effects of Healthy Lifestyle Behaviors on All Cause Mortality: A Systematic Review and Meta-Analysis," *Preventive Medicine* 55, no. 3 (2012): 163–70.

14 Centers for Disease Control and Prevention, "The Power of Prevention Chronic Disease... the Public Health Challenge of the 21st Century," 2009, 1–18.

15 Earl S. Ford et al., "Healthy Living Is the Best Revenge," 169, no. 15 (2010): 1355–62.

16 Roger Walsh, "Lifestyle and Mental Health," *American Psychologist* 66, no. 7 (2011): 579–92.

17 S. Jay Olshansky , Toni Antonucci, Lisa Berkman, Robert H. Binstock, Axel Boersch-Supan, John T. Cacioppo, Bruce A. Carnes, et al. 2012. "Differences in Life Expectancy due to Race and Educational Differences Are Widening, and Many May Not Catch up." *HealthAffairs* 31 (8): 1803–13.

18 Anne Case and Angus Deaton, "Rising Morbidity and Mortality in Midlife among White Non-Hispanic Americans in the 21st Century," *Proceedings of the National Academy of Sciences* 2015 (2015).

19 Paul Krugman, "Despair, American Style," *New York Times*, 2015, 9–12.

20 S. Jay Olshansky et al. "A Potential Decline in Life Expectancy in the United States in the 21st Century," *The New England Journal of Medicine* 352, no. 11, 2005, 1138-45.

21 Cordain L, Eaton SB, Sebastian A, Mann N, Lindeberg S, Watkins BA, O'Keefe JH, Brand-Miller J. Origins and evolution of the western diet: health implications for the 21st century. *American Journal of Clinical Nutrition* 2005; 81:341–54.

22 http://www.drugwarfacts.org/cms/Causes_of_Death#sthash.kqkNhzfH.dpbs

23 National Drug Intelligence Center, "The Economic Impact of Illicit Drug Use," 2011, 1–123.

24 Case and Deaton, "Rising Morbidity and Mortality in Midlife among White Non-Hispanic Americans in the 21st Century." *Proceedings of the National Academy of Sciences* 112, no. 49 (2015): 15078-15083.

25 US Department of Health and Human Services, "The Health Consequences of Smoking- 50 Years of Progress: A Report of the Surgeon General, Executive Summary," 2014.

26 Dietary Guidelines Advisory Committee, Report of the DGAC on the Dietary Guidelines for Americans, 2010: Part D . Section 7: Alcohol, 2010.

27 Centers for Disease Control and Prevention, "Alcohol and Public Health: Alcohol-Related Disease Impact (ARDI)," 2015, http://nccd.cdc.gov/DPH_ARDI.

28 C. K. Roberts, "Effects of Exercise and Diet on Chronic Disease," *Journal of Applied Physiology* 98, no. 1 (2004): 3–30.
29 Neville Owen et al., "Sedentary Behavior: Emerging Evidence for a New Health Risk.," *Mayo Clinic Proceedings*. Mayo Clinic 85, no. 12 (2010): 1138–41.
30 Marc T. Hamilton., Genevieve N. Healy, David W. Dunstan, Theodore W. Zderic, and Neville Owen. "Too Little Exercise and Too Much Sitting: Inactivity Physiology and the Need for New Recommendations on Sedentary Behavior." Current Cardiovascular Risk Reports 2008 (4): 292–98.
31 Marc T. Hamilton, Deborah G Hamilton, and Theodore W Zderic, "Role of Low Energy Expenditure and Sitting in Obesity, Metabolic Syndrome, Type 2 Diabetes, and Cardiovascular Disease," *Diabetes*, 2007.
32 Syed Imran Haider et al., "The Influence of Educational Level on Polypharmacy and Inappropriate Drug Use: A Register-Based Study of More than 600,000 Older People," *Journal of the American Geriatrics Society* 57, no. 1 (2009): 62–69.
33 Centers for Disease Control and Prevention, "The Health Effects of Overweight and Obesity," 2015, http://www.cdc.gov/healthyweight/effects/.
34 Francesco P Cappuccio et al., "Sleep Duration and All-Cause Mortality: A Systematic Review and Meta-Analysis of Prospective Studies.," *Sleep* 33, no. 5 (2010): 585–92.
35 Nathaniel F. Watson et al., "Recommended Amount of Sleep for a Healthy Adult: A Joint Consensus Statement of the American Academy of Sleep Medicine and Sleep Research Society," *Sleep* 38, no. 8 (2015): 1161–83.
36 Peter Hart Research Associates 2015 http://hartresearch.com/americans-long-life-expectations-clash-with-reality/
37 Toni I. Antonucci, Kristine J. Ajrouch, and Kira S. Birditt, "The Convoy Model: Explaining Social Relations from a Multidisciplinary Perspective," *Gerontologist* 54, no.1 (2014): 82-92.
38 Sheldon Cohen et al., "Social Ties and Susceptibility to the Commom Cold," *The Journal of the American Medical Association* 277 (1997): 1940–44.
39 Laura Fratiglioni et al., "Influence of Social Network on Occurrence of Dementia: A Community-Based Longitudinal Study," *Lancet* 355, no. 9212 (2000): 1315–19.
40 Lisa F. Berkman and S. Leonard Syme, "Social Networks, Host Resistance, and Mortality: A Nine-Year Follow-Up Study of Alameda County Residents," *American Journal of Epidimiology* 109, no. 2 (1979): 186–204.
41 James S House, Cynthia Robbins, and Helen L Metzner, "The Association of Social Relationships and Activities with Mortality: Prospective Evidence from the Tecumseh Community Health Study," *American Journal of Epidemiology* 116, no. 1 (1982): 123–40.
42 Coleman, James S. "Social capital in the creation of human capital." *American Journal of Sociology* (1988): S95-S120.
43 Antonucci, Toni C., and Hiroko Akiyama. "Convoys of social relations: Family and friendships within a life span context." (1995).
44 Ye Luo et al., "Loneliness, Health, and Mortality in Old Age: A National Longitudinal Study," *Social Science Medicine* 74, no. 6 (2012): 907–14.
45 Holt-Lunstad, Julianne, Timothy B. Smith, and J. Bradley Layton. "Social relationships and mortality risk: a meta-analytic review." *PLoS medicine* 7, no. 7 (2010): 859.
46 Kiecolt-Glaser, Janice K., and Tamara L. Newton. "Marriage and health: his and hers." *Psychological Bulletin* 127, no. 4 (2001): 472
47 Williams, Kristi. "Has the future of marriage arrived? A contemporary examination of gender, marriage, and psychological wellbeing." *Journal of health and Social Behavior* 44, no. 4 (2003): 470.
48 Carr, Dawn C., Linda P. Fried, and John W. Rowe. "Productivity & Engagement in an Aging America: The Role of Volunteerism." Daedalus 144, no. 2 (2015): 55-67.
49 Miller McPherson, Lynn Smith-Lovin, and James M. Cook, "Birds of a Feather: Homophily in Social Networks," *Annual Review of Sociology* 27, no. 1 (2001): 415–44.
50 Neal Chalofsky and Vijay Krishna, "Meaningfulness, Commitment, and Engagement:The Intersection of a Deeper Level of Intrinsic Motivation," *Advances in Developing Human Resources* 11, no. 2 (2009): 189–203.
51 Donald C. Reitzes and Elizabeth J. Mutran, "Multiple Roles and Identities: Factors Influencing Self-Esteem Among Middle-Aged Working Men and Women," *Social Psychology Quarterly* 57, no. 4 (1994): 313.

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