

Living Longer, Not Healthier

How and Why Americans Cheat Death, but Not Sickness

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Executive Summary

Although COVID recently shortened life expectancy in the U.S., it has still increased by 64 percent over the last 50 years. While a stunning achievement, longer lives do not necessarily mean Americans are living more years in good health. People could be living longer but spend more years in ill health and discomfort, for instance. Alternatively, longer lives could mean additional years of good health. To explore the relationship between health and longevity, we analyze an annual, nationally representative survey administered by the U.S. Department of Health and Human Services between 1998–2021 in the years with a common set of questions about chronic health, finding:

U.S. adults became 17 percent more likely to develop a physical chronic health problem, including an over 40 percent increase in the probability of developing asthma, cancer and diabetes. In addition, U.S. adults became 25 percent more likely to suffer from coronary heart disease, hypertension, and a stroke. During this same time period, life expectancy grew by 3 percent through 2019 before falling to 0 percent in the aftermath of COVID.

Young adults (in their 20s) and younger middle-aged adults (in their 30–40s) saw the fastest increases in physical chronic health incident rates, increasing by 17 and 14 percent respectively. Young adults also became 29% more likely to say they felt unhealthy; adults in their 30s–40s became 33% more likely. In contrast, adults older than 50 became no more likely to say they felt unhealthy between 1998–2021.

Men became more physically unhealthy than women for the first time in recent history. Now, the average U.S. adult man is expected to both die 6 years before the average adult woman, and live those fewer years more unhealthy compared to women. In particular, by 2021, 56 percent of U.S. adult men had a chronic health problem – up from 44 percent in 1998. About 55 percent of women, who are 6 years older than men, on average, had a chronic health problem – up from 50 percent in 1998.



High-income adults continue to have lower physical chronic health incident rates than low-income adults (50% vs 64%), but that health advantage is shrinking in cancer, asthma, and hypertension incident rates. In particular, the difference between rich and poor adults in the likelihood of developing cancer shrunk by 56 percent between 1998–2020; 23 percent in asthma rates; and 22 percent in hypertension rates. Conversely, the rich-poor divide sharply increased in high cholesterol incident rates, caused by a surge in high cholesterol incident rates among low-income adults.

Despite sharp increases in the share of chronically unhealthy adults, there has been no increase in the share of adults seeking guidance from a physician. In particular, about 84 percent of adults saw a physician at least once a year between 1997–2021. Similarly, among groups that saw the largest increase in the likelihood of developing a chronic health issue (30–40 year olds, male, and high-income adults), their overall propensity remained unchanged during this period. However, the data are unclear about whether the volume of visits has increased over this time, along with the type of visits that have occurred over time.

This paper finds that U.S. adults have become more likely in recent decades to live with a physical chronic health issue, particularly young, young middle aged, and male adults. This trend has emerged even while improved vaccines and antibiotics, technology, and prescription drugs continued to lengthen life expectancy prior to the COVID epidemic. **In short, U.S. adults are now living historically longer than ever, but are also living increasingly less healthy lives.** While these countervailing trends do not seem to have restricted physical activity, they do have important implications for lifestyles. Adults living with chronic health issues tend to have higher mortality risks than those without those issues, suggesting their lives will likely be shorter than what is possible. They also face higher medical costs and a dependency on prescription drugs compared to healthy adults. Similarly, chronic health issues can cause a deterioration in the quality of life – and curb the potential of life.

More research is needed to understand the causes behind these trends. Diagnostic scope and depth improved during this period, for instance. But, other evidence points to lifestyle causes, including a deterioration in diet quality, exercise, work-life balance, among other related issues. Similarly, 97 percent of health spending in the U.S. is focused on restorative health, including life extending interventions like Statins and Insulin, while just 3 percent is focused on preventative measures, like counseling and advice for healthy living, regular screenings, and other related interventions.



Introduction

Improved vaccines and antibiotics, technology, and prescription drugs have extended life expectancies to nearly their longest point in human history.¹ As one sign of that trend, the life expectancy of a baby born in the United States grew by 64 percent between 1900 and 2022, from 47 to 77 years old. Although COVID-19 caused a recent decline in life expectancy, periodic dips are common over the past 122 years of data on life expectancy.² And, the overall trend is not slowing. Just in the last two decades alone, life expectancy increased by another 2 years. Similar trends are apparent around the world.³

But, there is less certain information about whether people are living healthier lives as well. Unlike life expectancy, which is measured with government-sponsored birth and death records, there is no equivalent population data available about the number of years that all people born in the U.S. spend in ill-health.

What work does exist has tended to use survey data to estimate health expectancy (also referred to as healthspans), or an estimated number of years that people are expected to live without a chronic health issue or an injury related disability.⁴ Popularized by the World Health Organization, this simple measure was created in 1970 by a researcher at the National Center for Health Statistics (now part of the National Institute on Health).⁵ It adjusts life expectancy estimates by using survey data that estimates the prevalence of diseases and injury related disabilities among different population segments. Using this simple method, the WHO (among many others) have estimated that the health expectancy of U.S. adults is 67 years, indicating that the average baby born in 2022 should expect about 10 years of ill-health in their lifetime.⁶

Related work has looked at trends in specific health outcomes over time, including changes in cholesterol levels, glucose, obesity, and other specific health outcome levels or prevalence.⁷ Results on specific metrics have been mixed. Some markers like body mass and waist circumference have sharply increased over time.⁸ Others like high blood pressure have fallen for adults between 35-44 years old since 1960.⁹

But, the use of drugs to manage chronic health problems like blood pressure or cholesterol may disguise the actual incidence rate of these health problems - and their attendant consequences for health, lifestyle, and financial security. For instance, there has been a 40 percent reduction in the likelihood of a heart attack over the past 30 years, which contributed to lengthened lifespans.¹⁰ But, the use of cholesterol-lowering medication during that same period more than doubled, suggesting that the incidence (and, likely, diagnosis) of health problems actually sharply increased. In fact, almost 1 out of every 3 adults now uses one of these prescription drugs.¹¹ This is one reason why heart attack rates fell, even while average waist circumferences sharply increased over this same time period - population level trends that were once positively correlated.¹² This means more people are likely living with this chronic health problem, even while they are able to ward off the most significant consequences with prescription drugs.



Healthspan estimates have additional limitations. This includes that the estimates do not estimate the number of congruent years of good health. Having a major health problem every 5–10 years is a very different quality of life outcome than having problems clustered at the end of life, for instance. Estimates are also highly variable, depending on the specific methodology – some just look at the incidence of chronic health issues; others also consider physical and cognitive limitations, for instance.¹³ Healthspan estimates also do not tend to provide guidance about the implications for different segments of the population. While some estimates indicate that a baby born in the U.S. today can expect 67 years of good health, it's not clear what health outcomes someone in their 30s, 40s, or 50s can expect, for instance. Similarly, we know that there are widespread health disparities *between* income, gender, and ethnic groups, but it's unclear how the likelihood of physical, mental, and social health outcomes vary over time *within* these groups.¹⁴

This paper strives to address these opportunities. Among our findings, we report that U.S. adults became 17 percent more likely to develop a chronic health problem between 1998–2021, while life expectancy remained unchanged during this time period. That increase was driven by an over 50 percent increase in the probability of developing asthma, cancer and diabetes, which was offset by a decline in the likelihood of experiencing a heart attack. Younger adults in their 20s and young-middle aged adults (between 30–49 years old) experienced the largest increase in chronic health incident rates. We conclude with a series of recommendations to place more attention on boosting health, alongside efforts to continue to lengthen lives.

Methodology

The primary data for this analysis are from The National Health Interview Survey (NHIS), administered by the National Center for Health Statistics, which is a center based at the United States Health and Human Services' Center for Disease Control and Prevention. The survey includes about 30,000 interviews with U.S. households, which is used in conjunction with survey weights to make the results reflective of the overall U.S. household population. Surveys are conducted in the home of the respondent, and some also include a follow-up phone conversation. The data over time is a repeated cross-sectional survey, indicating that there is a new panel of representative participants in each survey year.

Survey data are available from 1957 through 2021. While some questions have been consistently asked over time, other questions are only featured for shorter durations, such as the share of households that have been prescribed drugs or seen a wellness specialist. Administrators have also changed survey questions over time, making it difficult in some cases to compare data over time. For instance, questions about cholesterol were intermittently asked during the time series, making it difficult to establish clear annual trends. In these cases, we utilized data that was available with consistent definitions for (i) the longest period of time and (ii) in the most recent years available. This is why there is some variation in the time periods. It's also why we were unfortunately not able to utilize data in most cases from the earlier period of the survey history.



This paper focuses on physical chronic health conditions, but omits obesity from the analysis, which is often utilized in definitions of these types of conditions.¹⁵ We did this because we were not as confident in the obesity measure relative to other measures in the survey. In particular, obesity is measured as a function of body mass index, or the height and weight of the individual. This simple measure omits numerous moderating factors, including muscle mass, pregnancy, the distribution of fat within the body, and structural differences in bodies, such as leg or torso length.¹⁶ However, including this measure would have only strengthened the conclusions reached in this paper, since obesity rates were on the rise throughout the duration of this analysis.¹⁷

Finally, we focus solely on physical chronic health conditions, despite our belief that functional chronic conditions should be included in a discussion of chronic health issues. We did this, too, because of data limitations in the The National Health Interview Survey (NHIS). In particular, the longest time period “functional health limitations” had a consistent set of variables available was between 1997–2018, which was too out-of-date, relative to the data available for consistent periods of time on physical chronic health conditions. However, here, too, including this measure would have only strengthened the conclusions reached in this paper, since numerous functional health issues, like depression, were on the rise among younger and younger-middle aged adults throughout most of the period included in this analysis.¹⁸

Survey Validation

To consider the validity of the sample, we compared the median age of survey respondents to Census data on the median age of the U.S. population. We considered age as a tool to assess validity, since the expected likelihood of developing a chronic health problem is strongly correlated with age.¹⁹ We find that the median age of the survey population is nearly perfectly correlated with the U.S. Census bureau data on the median age of the U.S. population. These data provide some assurance that the sample is representative of the U.S. population.

Variables of Interest

The analysis includes several key variables that were created from specific survey questions. This includes:

Physical, Chronic Health problem – A physical chronic health problem is a disease or problem that persists over time, including hypertension, high cholesterol, coronary heart disease, other heart disease, heart attack, stroke, heart condition, asthma, cancer, and diabetes. Importantly, the presence of a chronic health problem does not necessarily mean that it is a permanent condition, even if it is persistent for a period of time. It also does not mean that it cannot be managed over time, with the worst consequences kept at bay. Instead, this term is strictly focused on the development and presence of a persistent health problem. If Americans are getting healthier over time while they are living longer, we should see the prevalence of these health problems fall over time.²⁰ We also were not able to measure obesity (as explained above), which is another chronic health issue that is sometimes included in this category. National Health and Nutrition Examination Survey (NHANES) data indicate that this rate has also been on the increase among the general population.²¹



Bad Health – Among survey respondents that do not have a chronic or functional health problem, we consider how they self-assess their health, from Excellent to Poor. For this variable, we include responses of “Fair” and “Poor” as indicators of people that consider themselves to be in bad health. “Excellent,” “Good,” and “Average” were not included.

Doctors Visit – This is a simple question asked over time about whether a doctor was seen over the past year. It unfortunately does not get into the specifics of that visit (e.g., prevention or treatment), meaning there may be broad variation in the reasons for the visit. More recently, there has been an additional question added about interactions with wellness specialists, but there is not enough data yet to establish trends over time.

Demographic variables – (Age) We measure age in fixed 10-year increments (or bins), from 0-10 to 80 and older, and also consider five adult age categories: young adults (20s), young-middle aged adults (30-40s), older-middle aged adults (50-60s), and older adults (70+). We did not use quartiles or quintiles over time because these age ranges vary over time, and we wanted to see how the health experience of specific age groups varied over time. (Gender) Similarly, we use the gender categories provided by the survey.

Income – We measured income in quartiles over time, splitting the sample population up in each year between four even categories: low income, low-middle income, high-middle income, and high-income. This means that high-income households had a higher household income than 75 percent of other households in the specific year of the survey. This controlled for the inflation effects over time.

Time-Series Dynamic

One important survey dynamic that is important to highlight is that the age of survey respondents increased over the years of the survey, as the longevity of the U.S. population increased. In 1998, for instance, the median age of respondents was 34 and the 90th percentile was 67 years old. By 2021, the median age had increased to 38 and the 90th percentile was 71 years old. This has important implications for an analysis of health within different segments of the population over time, since those segments may have become progressively older and therefore more prone to illness, independent of any change in their relative health status at a given age.

For instance, high-income adults are much more likely to live longer than lower-income adults.²² As they have lived progressively longer lives through the survey period, they are getting older as a group. This means high-income adults may become more prone to chronic health issues simply because they are getting older as a group, and not because their relative health status at a given age changed. The same is true for the demographic categories: all groups have become older over time. To control for this phenomena, we consider fixed aged increments (or bins) over time. This allows us to compare the relative experience of a similar age group across time.

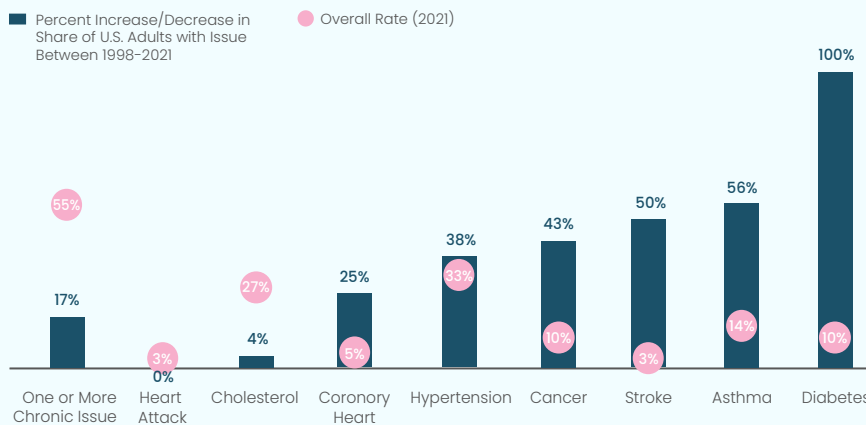


Results

U.S. adults became 17 percent more likely to develop a physical chronic health problem, including an over 40 percent increase in the probability of developing asthma, cancer and diabetes. In addition, U.S. adults became 25 percent more likely to suffer from coronary heart disease, hypertension, and a stroke. During this same time period, life expectancy grew by 3 percent through 2019 before leveling off at 0 percent growth in the aftermath of COVID.

A chronic health problem is a disease or problem that persists over time, like high cholesterol, heart disease, cancer, asthma, or diabetes. Importantly, the presence of a chronic health problem does not necessarily mean that it is a permanent condition. It also does not mean that it cannot be managed over time, with the worst consequences kept at bay. Instead, this term is strictly focused on the development and presence of a persistent health problem. If Americans are getting healthier over time while they are living longer, we should see the prevalence of these health problems fall over time.

Chronic Health Incident Rate and Percentage Change Between 1998-2021



Note: Authors' analysis of The National Health Interview Survey (NHIS), administered by the National Center for Health Statistics.

We find that the likelihood of chronic health problems among adults increased between 1998-2021 by 17 percent, even while life expectancy was generally flat. In particular, the life expectancy of U.S. adults increased by about 3 percent through 2019, and then fell back to flat in the years during and after the COVID pandemic. However, during that same period, the proportion of U.S. adults with chronic health issues increased by about 17 percent. That increase was also fairly steady over time and was not impacted by COVID.

During this same period, there was an increase in the average age of survey participants, which likely contributed to the increase in the overall chronic health incident rate. In particular, the median age increased by about 12 percent between 1998-2021, and the 90th percentile age (or the age of a survey respondent that was older than 90 percent of others) increased by about 6 percent during this time period. That aging of the survey population is roughly equivalent to the trend observed by the Census Bureau in their Population Estimates Program.²³ Together, these trends likely pushed-up the overall chronic health incident rate, simply because older adults are more likely than younger adults to be diagnosed with a chronic health problem.



Even so, there were sharp overall increases in the likelihood of developing specific chronic health conditions among U.S. adults, which were far larger compared to the rate of aging changes. The probability of developing diabetes grew the fastest among U.S. adults between 1998–2021, increasing from 5 percent of U.S. adults in 1998 to 10 percent in 2021. While more work needs to be done to explain this trend, this increase paralleled an increase in obesity rates among U.S. adults as well as a decline in diet quality and the number of hours exercising – all factors related to the likelihood of developing diabetes.²⁴

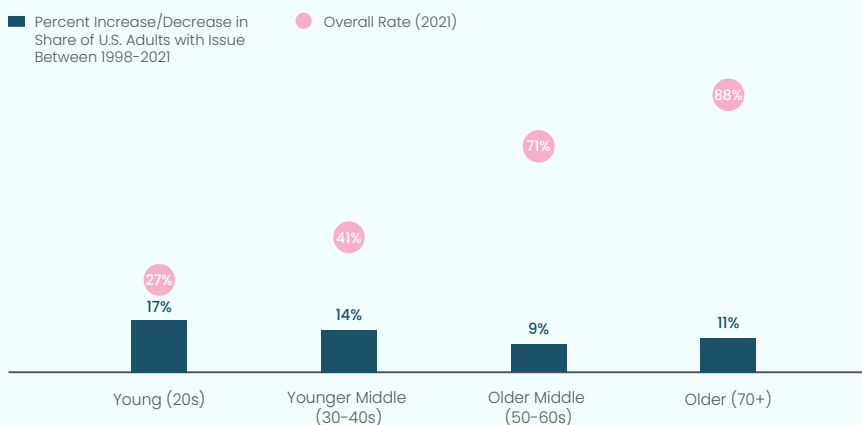
Asthma and cancer rates also increased sharply during this time period. The likelihood of developing asthma increased from 9 to 14 percent during this time period, while cancer incident rates increased from 7 to 10 percent of all U.S. adults. More work also needs to be done to understand these trends, but there is some work that has found deteriorating air quality in cities, increases in obesity rates, decreases in food quality, and perhaps diagnostic enhancements may be helping to drive-up these rates to levels well above the rate of aging among the overall adult population.²⁵

Other major chronic health categories, including coronary heart disease, hypertension, and stroke incident rates also increased during this same period by 25–50 percent. Of these, hypertension is the most common, now impacting nearly 2 out of every 5 U.S. adults. High cholesterol rates also remain stubbornly common, impacting over 1 out of every 4 U.S. adults through out this time period, even while the use of statins surged during this time period.²⁶ But, heart attacks, strokes, and coronary heart disease all remain relatively uncommon, impacting 5 percent or less of the U.S. population. These trends underscore that prescription drugs and medical interventions have been able to ward off increases in some of the most serious chronic health outcomes, even while the health problems of U.S. adults have broadly increased.

Young adults (in their 20s) and younger middle aged adults (30–40s) saw the fastest increases in chronic health incident rates, increasing by 17 and 14 percent respectively. Adults in their 20s also became 29% more likely to say they felt unhealthy; young-middle aged adults became 33% more likely. In contrast, adults older than 50

became no more likely to say they felt unhealthy between 1998–2021.

Chronic Health Incident Rate and Percentage Change Between 1998–2021, by Age

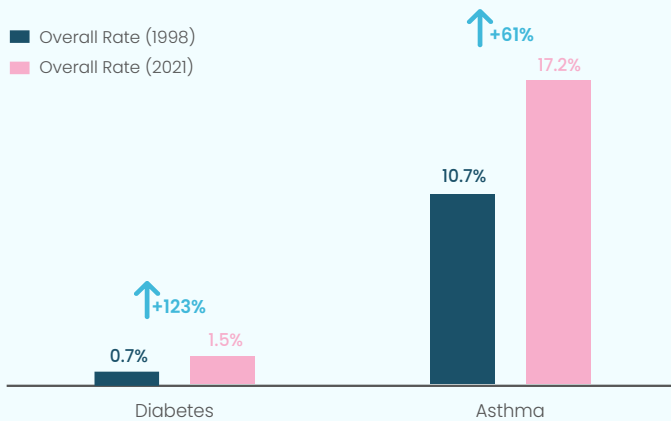


Note: Authors' analysis of The National Health Interview Survey (NHIS), administered by the National Center for Health Statistics.

Consistent with expectations, older adults are much more likely than younger adults to develop chronic health problems. In particular, about 88 percent of adults over the age of 70 are managing some type of chronic health issue, including cancer, diabetes, heart disease, high cholesterol, among other persistent health problems. By contrast, about 71% of adults in their 50–60s have a chronic health issue, along with 41% of adults in their 30–40s and 27% of adults in their 20s.

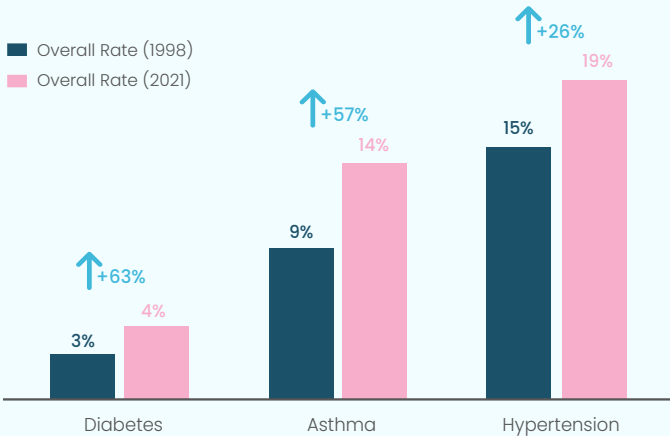


Major Drivers of Change to Chronic Health Incident Rate Between 1998–2021, Ages 20–29



Note: Authors' analysis of The National Health Interview Survey (NHIS), administered by the National Center for Health Statistics.

Major Drivers of Change to Chronic Health Incident Rate Between 1998–2021, Ages 30–49



Note: Authors' analysis of The National Health Interview Survey (NHIS), administered by the National Center for Health Statistics.

However, that trend is reversed when looking at the pace of change in the chronic health incident rate across age groups over time. Leading the group, adults in their 20s saw a 17 percent increase in their chronic health incident rate between 1998–2021, compared to a 14 percent increase among adults in their 30–40s, 9 percent increase among adults in their 50–60s, and 11 percent increase among adults in their 70s. In short, all age groups are becoming more unhealthy, but the youngest are becoming healthier at a faster rate than those that are older.²⁷

Among adults in their 20s, asthma rate increases are the largest contributor to their overall increase in chronic health issues. In particular, 11 percent of adults in their 20s were managing asthma in 1998, compared to 17 percent by 2021. That rate of increase was also fairly steady during that period, increasing in about half of the years during that time period. Diabetes also played a marginal role, growing from 1 percent of 20 year olds to 2 percent by 2021.

Increases in asthma rates also played a large role in the overall increase of chronic health issues among adults in their 30s and 40s, growing from 9 percent of that population in 1998 to 14 percent by 2021. Hypertension was the next largest contributor, increasing from 15 percent to 19 percent during this time period. We also found that diabetes rates also played a marginal role in the overall increase, growing from 3 percent of adults in this age group in 1998 to 4 percent by 2021.

Adults in their 50–60s are also progressively becoming less healthy, along with adults 70 years and older. However, the change in the incident rate among adults older than 70 is largely explained by the increase in the age of survey participants in that group of adults.

Together, these data indicate that Americans have become more unhealthy, even while life expectancy has remained unchanged. More concerning, the prevalence of chronic health issues is now widespread across age groups, including more than 1 in 4 adults in their 20s and 2 out of every 5 adults in their 30s and 40s, 3 out of every 4 adults in their 50s and 60s, and nearly 9 out of every 10 adults over the age of 70.

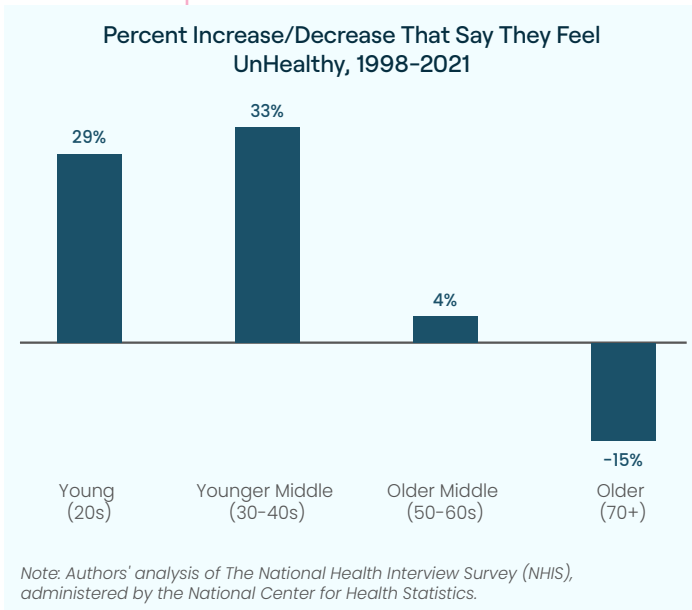
Increases in asthma rates appear to be the biggest driver of these trends among younger and younger-middle aged adults. Researchers have attributed a number of



causes to these trends, including the growing urbanization of the population, changes in diagnostic practices, increases in the amount of time younger adults are spending indoors and the associated Vitamin D deficiencies, rising obesity rates (which constrict the lungs), and increases in sanitation (which deprives the immune system from developing immunity from viruses, bacteria and parasites).

Hypertension rate increases among 30–40 year olds similarly seem to be growing largely because of lifestyle factors. In particular, researchers attribute declining physical activity among 30–40 year olds and unhealthy diets as principal causes of increased hypertension rates globally.²⁸ However, the Bureau of Labor Statistics survey on time-use does not indicate that physical activity has declined in the U.S. during this period. For instance, between 2012 (the earliest year of the survey) and 2022 (the most recent), the average adult between the age of 35–44 spent about 14 minutes every day exercising in both time periods, and saw little change between those years. Data on health quality is more difficult to verify, however, the Advisory Committee to the USDA on nutrition guidelines has reported steady increases in the number of calories consumed by U.S. adults, which may indicate growing incident rates of unhealthy diets.²⁹ Given these data, it may be the case that hypertension is increasing because exercise has not increased in parallel with the increase in calorie consumption.

To see whether these trends were also reflected in self-assessments, we considered responses to self-assessments of health status. Self-assessments are well known to be error-prone.³⁰ Nonetheless, they can be instructive at identifying sentiments across different segments.



Consistent with the findings associated with chronic health issues, we find that younger and younger-middle aged adults became much more likely to rate their health as unhealthy between 1998–2021. In particular, adults in their 20s also became 29% more likely to say they felt unhealthy; and young-middle aged adults became 33% more likely. In contrast, adults older than 50 became no more likely to say they felt unhealthy between 1998–2021.

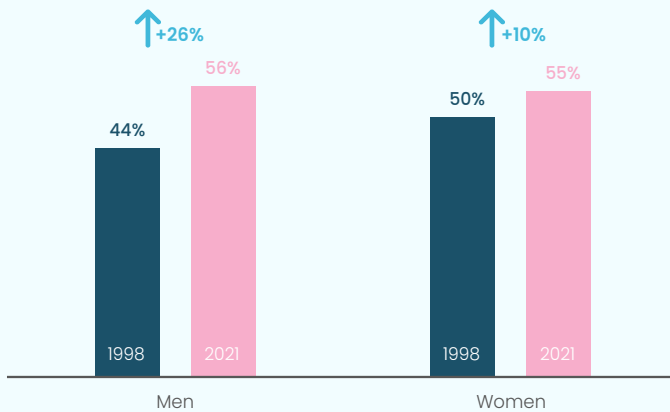
However, the difference between the chronic health incident rate and self-assessments is striking. About 27 percent of young adults, for instance, have a chronic health issue. But, only 5 percent of that population feels like they are unhealthy. Similarly, young-middle aged adults

have a 41 percent chance of having a chronic health issue, yet just 10 percent feel like they are unhealthy. Even adults older than 70 years old reflect this trend: despite 88 percent having some type of chronic health issue, only 24 percent indicate that they feel unhealthy. This disconnect between actual and perceived health may be the result of the normalization of chronic health problems, given the broad prevalence of chronic health problems. Having one of these problems may not be enough of a reason to feel unhealthy, particularly if it can be managed through prescriptions or other interventions.



Men became more unhealthy than women for the first time in history, an advantage enjoyed because they tend to die at a younger age than women. Now, the average U.S. adult man is expected to both die 6 years before the average adult woman, and live those fewer years more unhealthy compared to women. In particular, by 2021, 56 percent of U.S. adult men had a chronic health problem - up from 44 percent in 1998. About 55 percent of women, who are much older than men, on average, had a chronic health problem.

Change in Chronic Health Incident Rate Between 1998-2021, by Major Gender



Note: Authors' analysis of The National Health Interview Survey (NHIS), administered by the National Center for Health Statistics.

We next looked at differences across the two major gender groups. By way of context, women live longer lives in every country where reliable data is available.³¹ In the U.S., for instance, women were expected in 2021 to live nearly 6 years longer than men, on average.³² Similarly, in the National Center for Health Statistics survey, the average woman respondent was consistently 2-3 years older than the average man between 1997-2021.

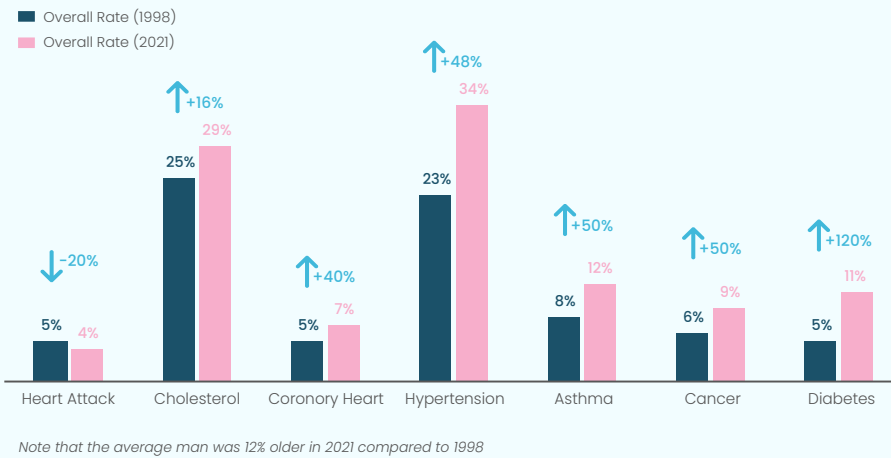
Since women are older as a group compared to men and chronic health incident rates are correlated with age, men should be less likely to have a chronic health issue. Consistent with this expectation, we see this “health advantage” among men clearly in the beginning years of this time period. For instance, in 1997, about 44 percent of men had a chronic health issue compared to 50 percent of women. Ten years later, in 2007, that gap between men and women had closed, but women still retained an advantage.

But, this “health advantage” enjoyed by men had vanished by 2021. In fact, men are now more likely than women to have a chronic health issue, even though they live much shorter lives. The reason is that the rate of chronic health issues among men grew much more swiftly between 1997-2021 compared to women. In particular, between 1997 and 2021 men became 49 percent more likely to be diagnosed with a chronic health problem, compared to a 28 percent increase among women. Given the much faster pace, men are now not only more likely to live shorter lives than women; they’re also more likely to be living those shorter lives with chronic health problems.

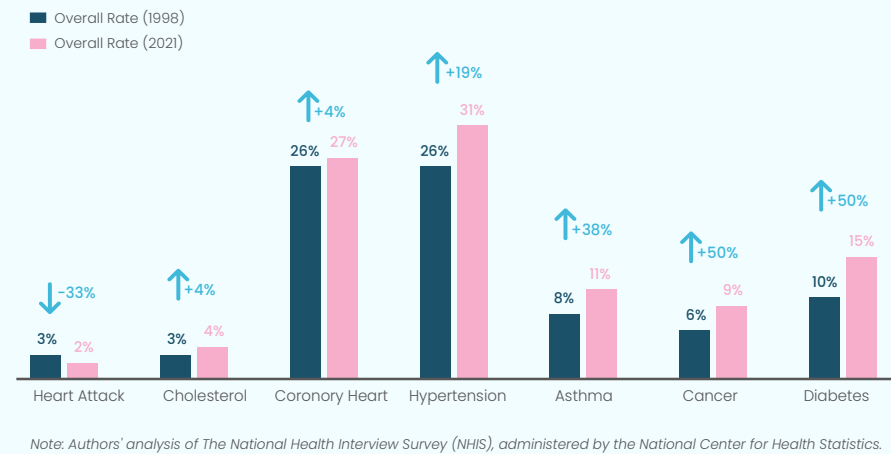
Looking at the drivers of these trends, we find that the incident rate of nearly all chronic health issues grew at a faster rate for men compared to women. For instance, hypertension rates among men increased by 48 percent between 1998-2021, compared to a 19 percent increase among women. Similarly, cancer rates among men grew by 50 percent during this time period, compared to a 38 percent increase among women. And, there was a 120 percent increase in the incident rate of diabetes among men during this time period, compared to a 50 percent increase among women. Reasons for these changes are not yet conclusive. But, changes in diagnostics during this period specific to men (such as for prostate cancer), as well as more general changes to lifestyle factors associated with chronic health incident rates (such as caloric intake increases), may be drivers of these trends.



Major Changes to Chronic Health Incident Rate Between 1998–2021, by Men and Type



Major Changes to Chronic Health Incident Rate Between 1998–2021, by Women and Type



High-income adults continue to have lower chronic health incident rates than low-income adults, but the health advantage enjoyed by higher income adults is shrinking in cancer, asthma, and hypertension incident rates.

In particular, the difference between rich and poor adults in the likelihood of developing cancer shrunk by 56 percent between 1998–2020; 23 percent in asthma rates; and 22 percent in hypertension rates. Conversely, the rich-poor divide sharply increased in high cholesterol incident rates, caused by a surge in high cholesterol incident rates among low-income adults.

Research has established that health outcomes, access, and literacy are strongly associated with household income levels, leading to wide disparities in life expectancy.³³ Consistent with these findings, we find that the likelihood of developing a chronic health issue decreases incrementally as household income. In particular, households in the bottom income quartile have a 64 percent chance of having a chronic health issue, compared to 56 percent of low-middle income households, 55 percent of middle

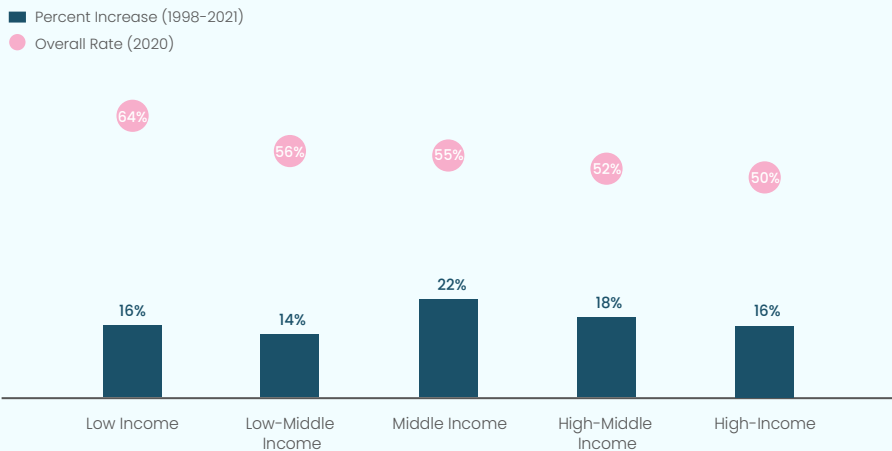
income households, 52 percent of high-middle income households, and 50 percent of high income households.

We also find that the overall chronic health gap between rich and poor households changed little between 1998–2021. In particular, low-income adults were 28 percent more likely to have a chronic health issue in both 1998 and 2021. Together, these data underscore the stubborn, systematic nature of health inequities.

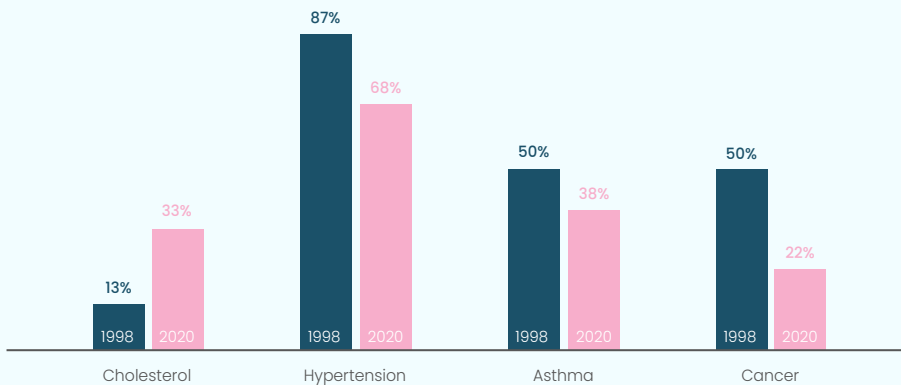
However, the gap between rich and poor is closing within specific chronic health categories. Leading that trend, the gap in cancer incidence rates among high and low income households closed by 56 percent during this time period. In particular, high-



Chronic Health Incident Rate and Percentage Change Between 1998–2021, by Income Group



How Much More Likely Low-Income Adults Are to Have a Chronic Health Issue Compared to High-Income Adults, by Year and Type



Note: Authors' analysis of The National Health Interview Survey (NHIS), administered by the National Center for Health Statistics.

income adults were 50 percent less likely to be diagnosed with cancer in 1998 compared to lower-income adults. But, that difference had shrunk to 22 percent by 2021. One reason may be the increased breast and prostate cancer screening during this period, which was a benefit afforded principally to those with insurance, which higher income households are more likely than lower income households to own.³⁴ However, other work that has looked at the impact of surveillance and diagnostic changes on the increase in thyroid cancer rate found that it was limited.³⁵ Other work has speculated that more general factors, such as increases in obesity rates, alcohol use, poor sleep, and the number of sedentary hours in a typical day, along with environmental factors related to pollution and chemicals.³⁶ Future research needs to consider the individual impact of these factors, and how they vary by income groups.

Those same factors may be behind the fact that the gap between rich and poor is also shrinking in hypertension incident

rates. In particular, high-income adults were 87 percent less likely to be diagnosed with asthma in 1998 compared to lower-income adults. But, by 2020, that difference had shrunk to 68 percent less likely. Research has speculated that an increase in unhealthy diets may be behind the overall increase in hypertension rates during this period, which may have been systematically more prevalent among higher income adults.³⁷

High cholesterol rates are the one major exception for this trend, which is alone responsible for the persistence of the gap between rich and poor in the overall rate. In particular, low-income households had a 13 percent higher likelihood of being diagnosed with high cholesterol in 1998 compared to higher income households. But, that increased likelihood had grown to 33 percent by 2021, a 167 percent increase.



Since statin use similarly surged during that time period, it is quite likely that this gap indicates the relative access to medications rather than underlying conditions. Supporting that conclusion, we also find that the gap between low- and middle-income households in high cholesterol incident rates also increased during this period by 188%.

We also found that there were large decreases in the gap between rich and poor in asthma incident rates, shrinking by 23 percent during this period. But, a closer look at the data indicates that this trend is less systematic compared to the other trends. 1998 showed an unusually large gap between low- and high-income incident rates. In addition, the trend in the magnitude of the differences between low- and high-income adults was less consistent during this period, rising in one year, and falling in the next. More years of data would be needed to infer whether there is a meaningful change in the gap between these two population segments.

We also considered whether changes in the age distribution of the survey varied by income groups to assess whether this impacted the trends. We found that the average high-income adults that was surveyed was about 8 percent older in 2021 compared to the beginning of the time series. But, other income groups were an average of 21 percent older in 2021 compared to the beginning of the series. This suggests that the gap between rich and poor may have declined even more than we find in the data.

Despite sharp increases in the share of chronically and functionally unhealthy adults, there has been no increase in the share of adults seeking guidance from a physician. In particular, about 84 percent of adults saw a physician at least once a year between 1997-2021. Similarly, among groups that saw the largest increase in the likelihood of developing a chronic health issue (30-40 year olds, male, and high-income adults), their overall propensity remained unchanged during this period.

The National Center for Health Statistics survey also asked survey participants to indicate whether they have seen a general physician in the past 12 months. Unfortunately, we do not know the frequency that they sought guidance during that time period. But, we can see whether the overall propensity to seek out a physician's evaluation has changed during this time period.

We find that there has been no increase in the share of adults seeking guidance from a physician, despite increases in the share of chronically unhealthy adults. In particular, about 84 percent of adults saw a physician at least once a year between 1997-2021, a share of the population that fluctuated very little during this time period.

During this same time, the availability of doctors increased by about 16 percent from about 2.25 per-10,000 people to 2.67, suggesting access to doctors may not have been a limiting factor in the lack of change in overall doctor utilization.³⁸ However, time-use surveys indicate that physicians may have worked progressively shorter hours through at least half of this time period.³⁹ Similarly, there is some data that indicates the share of time allocated to administrative tasks may have increased during this time period.⁴⁰ Together, these data indicate that changes to doctor availability during this time period is unclear, along with how, if at all, that trend impacted the flat overall utilization rate.



Conclusion

This paper finds that U.S. adults have become much more likely in recent decades to live with a chronic health issue, particularly young adults, young-middle aged adults, and males. This trend has emerged even while improved vaccines and antibiotics, technology, and prescription drugs continued to lengthen life expectancy through most of this time period. In short, U.S. adults are now living longer while also living less healthy.

While these countervailing trends do not seem to have restricted physical activity and are not fully reflected in self-assessments of health, they do have important implications for adults alive today. Adults living with chronic health issues tend to have higher mortality risks than those without those issues, suggesting their lives will likely be shorter than what is possible – even if medical innovations are able to keep people alive for longer than past generations. They also face higher medical costs managing a chronic health issue and often must increase their utilization of medication, medical experts, and associated products and services. Similarly, chronic health issues can cause a deterioration in the quality of life – and curb the potential of life.

More research is needed to understand the causes behind these trends. Diagnostic scope and depth improved during this period, for instance. But, other evidence points to lifestyle causes, including a deterioration in diet quality, exercise, work-life balance, among other related issues. In addition, 97 percent of health spending in the U.S. is focused on restorative health, including life extending interventions like Statins and Insulin, while just 3 percent is focused on preventative measures, like counseling and advice for healthy living, regular screenings, and other related interventions. With the focus of health spending on longevity rather than health, it is not surprising that life expectancy increased through most of the time period in this analysis, even while chronic health incident rates increased.

For these reasons, we recommend a greater focus on funding research and aiding innovations that address modifiable risk behaviors associated with chronic health incident rates, like nutrition, mental and physical strength, habits, sleep, and supplementation. We also recommend that we expand the frequency and depth of routine health screening, so consumers are better able to proactively address health threats before they become chronic health problems. Finally, both efforts would be aided by expanded funding for federal data gathering and analysis, which would provide resources for tracking population characteristics related to chronic health incident rates in a systematic, representative manner.



About the Author

Matt Fellowes is a co-founder of BellSant, and a longevity and financial innovation leader. Prior to BellSant, Matt was the President of Investing at Capital One, Founder and CEO of United Income (acquired by Capital One), Chief Innovation Officer at Morningstar, and Founder and CEO of HelloWallet (acquired by Morningstar). Earlier in his career, Matt was a Fellow at the Brookings Institution and an adjunct professor of public policy at Georgetown University and George Washington University.

Matt currently sits on the Board of Directors of Fellowes Inc. and has recently completed two 3-year terms on the Advisory Board of the Stanford University Center on Longevity. His research has been published in academic journals and covered in over 1,000 media stories, including feature stories in the Wall Street Journal, Economist, the New York Times, the Washington Post, CNN, Fox News, Business Week, among dozens of others. Matt has testified in front of the U.S. Congress and State Houses across the country and advised dozens of elected officials, businesses, and regulatory agencies.

A native of Chicago, he holds a PhD from the University of North Carolina at Chapel Hill, an MPP from Georgetown University, and a BA from St. Lawrence University. Matt has been recognized as a leading innovator by Forbes, Washington Post, Workplace, Huffington Post, The Webbies, and industry organizations like Finnovate, where his team won the distinction as having the most innovative financial technology in 2016. He lives in Washington, DC with his wife and two daughters.

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About BellSant

BellSant is an independent health advisor platform that uses science to help its members get healthier, stronger, and live better. Working with a team of 20 academics at 15 leading universities, BellSant utilizes regular blood diagnostics and physical and mental strength assessments to give its members their biological age and pace of aging in 11 systems of health, along with personalized, independent advice to slow their aging and feel better.



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